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MONTHLY REPORT

OF THE

DEPARTMENT OF AGRICULTURE

FOR

OCTOBER, 1876.

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MONTHLY REPORT.

STATISTICAL DIVISION,
DEPARTMENT OF AGRICULTURE,
Washington, D. C., October 25, 1876.

SIR: I respectfully present for publication a digest of crop-reports for October; extracts from correspondence; a communication presenting a new plan in the preparation and marketing of cotton; paper of Mr. L. F. Allen upon American live stock, presented to the agricultural congress at Philadelphia; minor statistics; domestic and foreign markets, &c.

Respectfully,

J. R. DODGE,
Statistician.

Hon. FREDERICK WATTS,
Commissioner.

DIGEST OF CROP-RETURNS.

WHEAT.

Our October returns indicate a reduction in the yield of the wheat-crop of nearly one-sixth, while the quality is somewhat superior. More accurate statistics may possibly be given after the results of threshing are more fully known. Every section of the Union indicates a reduced product except the Middle States, which increased about 2 per cent. The New England States fell off 4 per cent.; the South Atlantic States 2 per cent.; the Gulf States 27 per cent.; the Southern inland States 8 per cent.; the States north of the Ohio River 14 per cent.; the States west of the Mississippi River 27 per cent.; the Pacific States nearly 2 per cent. These figures point to a yield of about 245,000,000 bushels. This, however, will be the subject of further examination and inquiry in our November returns.

The condition of winter-wheat at the date of our last report before harvest (July 1) was about 5 per cent. below average. It had suffered severely from winter-killing in all the Northern States; but the conditions of the growth during the spring months were, on the whole, quite favorable, and still better during June. At the end of May, Michigan was the only Northern State in which winter-wheat was reported as of a full average condition; but on the first of July the general improvement of the crop had brought several other States up to the same figures. In the South Atlantic States a mild winter, followed, generally, by favorable spring weather, presented a condition of extraordinary

promise, with a remarkable absence of the usual drawbacks. Every county in Maryland reported a full average condition, and some, 20 per cent. above. Only seven counties in Virginia fell below average, while most of the counties of North Carolina were above; but farther south rust and insect-ravages had already left their mark upon the growing crops. These destructive influences, aggravated by local freshets, affected the crops of the Gulf States and Southern inland States, (except West Virginia,) so that, at the end of June, the whole wheat-field south of Virginia and the Ohio River indicated a condition of but three-fourths of average. West Virginia continued to improve, and rose to 15 per cent. above average before harvest. A general improvement was noted in the States north of the Ohio River, but the injuries from winter-killing were too severe and extensive to be repaired. All of the States west of the Mississippi improved during June, except Nebraska; Mississippi and Kansas rising above average. During this month the condition of the crop on the Pacific coast fell below average.

Spring-wheat, on the 1st of July, had fallen to 15 per cent. below average. In the New England States, it had improved; but this improvement was more than counterbalanced by the imperfect conditions of growth, aggravated by insect ravages, in the great spring-wheat regions of the Northwest. The Pacific States also reported improvement; but our August returns indicated a decline during July, which still further reduced the general condition, especially from the depredations of insects in the Northwest. On the 1st of September, the general estimate of condition for both winter and spring wheat was 81 per cent. of a full average.

Our October returns, as a general thing, indicate an advance in the wheat yield of those States in which the yield of 1875 had fallen below that of 1874, and *vice versa;* but in some States, especially in the Northwest, there is a falling-off from even the reduced yields of 1875, viz, New Jersey, Pennsylvania, Michigan, Indiana, Illinois, Iowa, Kansas, and Oregon. In the New England States, extreme summer temperature at a critical stage of the crop is complained of, together with occasional injuries of the midge. In some parts of Maine, early sowings yielded lightly, while later sowings were very satisfactory. In the Middle States, the marked increase in New York and Delaware more than counterbalanced the slight decline in Pennsylvania and New Jersey; but the increased yield of this section is not sufficient to repair the losses of 1875 so far as to bring the crop up to the standard of 1874. Maryland and Virginia have made up their losses of 1875; but the decline in the other South Atlantic States, in the Gulf States, and in the Southern Inland States, more than absorbs their previous gains upon the crop of 1874. Frederick, Maryland, reports that fields treated with phosphate excelled others in yield, and the crop exhibited a better color; Calvert made the best crop for many years. Kentucky, West Virginia, and Ohio have considerably increased the yield of 1875; but that showed a great reduction from the previous year. The other States north of the Ohio report a reduced yield, making the crop of this region about 14 per cent. less than in 1875, and nearly one-fourth less than in 1874. The western and northwestern counties complain of destructive insect ravages. West of the Mississippi, the crop of 1875 was a little larger than that of 1874; but that of 1876 shows a decline or 27 per cent. from its predecessor. Insect ravages were numerously reported, and the grasshoppers made their annual incursion in the northwestern counties in time to injure the spring-wheat. Reports of their ravages also come from several points in the Territories. On the

Pacific coast, California barely equaled her reduced crop of 1875, while that of Oregon experienced a still further reduction of 12 per cent.

RYE.

The rye crop of 1876 is reported 4 per cent. less than that of 1875, but in quality it averages somewhat above its predecessor. The larger deficiencies are mostly in States that produce small crops, though Illinois and Wisconsin, with their large crops, produce 8 per cent. and New York 7 per cent. less than last year. The larger producing States generally report yields not greatly varying from those of 1875, while Kansas, in which rye culture has grown rapidly within the last few years, is 13 per cent. in advance of her previous figures. Of the great regions of the country, New England has made a slight increase; the Middle States, which produce about one-third of the crop of the country, fell off about 5 per cent.; the South Atlantic States about equaled their previous crop; the small crop of the Gulf States fell off about 10 per cent.; the Southern Inland States about held their own; the States north of the Ohio River, producing about 28 per cent. of the whole, fell off 7 per cent.; the States west of the Mississippi report a large increase, especially Nebraska, 42 per cent., and Kansas, 13 per cent., counterbalancing the deficiencies in Minnesota and Iowa, and bringing the yield of the whole section up to 9 per cent. above the previous year. On the Pacific coast, California advanced 3 per cent., while Oregon fell off 7 per cent.; but the crop of the two States is about 2 per cent. greater than last year.

OATS.

On the basis of the October returns, the oats crop of 1876 shows a falling-off of 23 per cent., compared with its predecessor. Every section of the Union is deficient, viz: New England, 7 per cent.; the Middle States, 7½ per cent.; South Atlantic States, 1 per cent.; the Gulf States, 5 per cent.; Southern Inland States, 2 per cent.; the States north of the Ohio River, 25 per cent.; the States west of the Mississippi, 49 per cent.; the Pacific States, 4 per cent. The States reporting a yield equal to that of last year are: Pennsylvania, 102; Delaware, 109; South Carolina, 126; Georgia, 115; Florida, 107; Alabama, 100; Louisiana, 104; West Virginia, 113; Kentucky, 103; Ohio, 102; California, 100. The greatest deficiencies were found in Kansas, losing 51 per cent.; Arkansas, 45 per cent.; Illinois, 39 per cent.; Missouri, 36 per cent. Ohio is the only Northwestern State that did not fall short. In the New England and Middle States, the crop was largely reduced by droughts prevailing at a critical period in the development of the grain. Several counties in the South bear their usual testimony in favor of winter-oats, but spring sowings were liable to rust. In Ohio, where the aggregate product was enlarged, there are complaints in several counties of light weight. The crop was affected by rust in many counties north of the Ohio River, and several report great injury in the shock from rain. In some cases, the grain was so light and shrunken as to be blown out of the windmill with the chaff. The same causes operated west of the Mississippi, where the ravages of grasshoppers added a fresh element of disaster. In very many localities, fields were not harvested, and where the grain was reaped it was frequently fed without thrashing. The grasshopper visitation was especially severe at several points in the Territories. California on the whole had a good crop, but Oregon was deficient. In Washington Ter-

ritory, winter-oats are spoken of at several points as yielding very heavy crops, the Scotch Potato variety being especially satisfactory.

The crop equaled last year's crop in quality only in Delaware, 100; Virginia, 100; North Carolina, 100; South Carolina, 104; Georgia, 106; West Virginia, 109; Kentucky, 112; Ohio, 105; California, 100. The greatest deficiency, 52 per cent., was in Missouri; Kansas was 37 per cent. short, and Illinois 34.

BARLEY.

The barley crop of the country yields about 6 per cent. less than last year. In all the States east of the Mississippi River, the yield is deficient, except in Connecticut and Georgia, each of which reports an increase of 2 per cent., and Kentucky, which has equaled her previous crop. A great falling-off is reported in the Middle States, in the States north of the Ohio River, in the States between the Mississippi and Missouri Rivers, and in Oregon; but Kansas, Nebraska, and especially California, the largest barley-raising State in the Union, have realized a large increase of yield, which, to a great extent, counterbalances the short crops of the other States. New York, the second, and Iowa, the third, in the list of barley-growing States, are deficient; the former 14 per cent. and the latter 12 per cent. Kansas and Nebraska, in which this crop is growing in importance, report increased yields; the former of 5 per cent., and the latter 25 per cent. The quality of the crop equals or surpasses that of its predecessor in Rhode Island, Connecticut, Kentucky, Ohio, Indiana, Minnesota, Missouri, Kansas, and Nebraska; in all the other States there is a decline.

BUCKWHEAT.

The buckwheat crop is reported as full average or above in Rhode Island, Virginia, Arkansas, Kentucky, Ohio, Wisconsin, and California; in the other States, it is below average, the minimum, 50, being in Delaware. From some localities in Maine and Vermont come reports of serious injuries by blight. From some parts of the Middle States, complaints of excessive heat and drought, while in others, excessive rains at the ripening season, greatly injured the crop. In Kent, Delaware, it was prostrated by a storm, September 17. The yield was remarkably fine at several points in Virginia, Carroll County, in that State, and Haywood, North Carolina, reporting the best crop for many years. No returns of the growth of this crop have been received from the Gulf States, but the small crop of Arkansas was quite satisfactory. In Tennessee and West Virginia, the grain was injured by drought. North of the Ohio River it had a varied fortune, enjoying good conditions of growth in some of the more southern counties, while from Michigan come reports of blasting heat drying up the crop. West of the Mississippi it was greatly depleted by the ravages of the grasshoppers, which were reported as especially voracious in several counties of Dakota; in Yankton "not a kernel was left."

CORN.

The condition of the corn crop on the 1st of October, on the whole, was nearly average. In the New England States it was a little above average. The Middle States, except Delaware, report a depressed condition. Drought during the growing season shortened the yield, while

in many counties the grain standing in the shock was seriously injured by heavy rains, especially where the crop was not well ripened. In New Jersey and Eastern Pennsylvania heavy storms prevailing about the middle of September prostrated many fields. Grub worms are reported in a few cases as somewhat troublesome. This section, as a whole, is about 8 per cent. below average. The South Atlantic States, especially in counties near the coast, suffered serious injury to this crop from the September storms above noted, which prostrated fields left uncut, while the heavy rains that followed spoiled a large amount of both grain and fodder. Freshets swept the crops stacked upon the river bottoms, and frosts damaged late crops in one or two counties of North Carolina. Some complaint of damage to upland crops from drought have been received from South Carolina. Maryland and South Carolina are full average, and Georgia largely above, but the deficiencies of Virginia and North Carolina cut down the general condition of this section to 2 per cent. below average. The crop in the Gulf States, on the whole, is about average, Texas reporting an especially fine condition. Conecuh, Alabama, reports the crop as selling at 50 cents per bushel, which is lower than at any time during the past ten years. Local prices show a considerable reduction in this State. Reports of injuries from drought and storms have been received from Mississippi and Louisiana, but the tone of reports from Texas indicates a very superior yield and quality; in some counties prices have fallen to 25 cents per bushel. The southern inland States are all above average, and the promise of large yields had already depressed local prices, especially in districts remote from market. Giles, Tennessee, reports corn selling at 12 or 15 cents per bushel. Kentucky, especially, promises a large crop and a consequent depression of prices, though some counties complain of light crops, the result of drought.

North of the Ohio River there is a deficiency on the whole, the low condition in Illinois and Michigan overbalancing the extra promise in the other States. Ohio reports a superior crop, generally of good quality, though drought in some localities, and excessive rains in others, reduced local averages. Prices in some of the rural districts have fallen to 25 cents per bushel. In Michigan, crops on low, wet lands are reported very poor, and in some cases not worth gathering, indicating injuries from excessive rains, but no reports of injurious frost have been received. Illinois is 6 per cent. below average, though several counties report the finest crop for years. September storms were destructive at a few points. The superiority of upland crops indicates an overplus of rain. Several reporters in Wisconsin mention, with satisfaction, that the crop was too far advanced to be much injured by either frosts or grasshoppers. West of the Mississippi the small deficiency in Missouri is more than repaired by the fine condition reported in all the other States. In Iowa crops were poor in low, wet lands, and the condition in several counties reduced greatly by grasshoppers. In Missouri local damage by storms is reported, but low prices indicate an abundant yield in the larger portion of the State. Kansas is full average, in spite of the grasshoppers and chinches, and Nebraska is considerably above. Insect ravages were quite severe in several counties of Colorado and Dakota, while frosts were destructive in Utah. The later part of the season, in several trans-Mississippi districts, was quite favorable, repairing to a considerable extent the disasters that had preceded. The crop on the Pacific coast is somewhat below average, the superior condition of Oregon not being sufficient to meet the depression in California.

COTTON.

The October reports indicate a reduction of the condition of cotton during the past month in the ten principal cotton States from an average of 90.5 to 82.7. The October average for these States was 88 in 1875 and 71.7 in 1874. The decline from September is slight in Georgia, Florida, and Mississippi, greater in Louisiana and Arkansas, and greatest in Alabama and Tennessee. There is a small advance in Texas. The figures for the condition of States are as follows: North Carolina, 84; South Carolina, 80; Georgia, 87; Florida, 80; Alabama, 70; Mississippi, 83; Louisiana, 82; Texas, 91; Arkansas, 86; Tennessee, 91. The impairment of the crop prospect has been caused by the equinoctial storm in North Carolina, drought and rust in Georgia, the caterpillar in Florida and Alabama, the boll-worm in Arkansas, and frost in Tennessee. The caterpillar is confined to the southerly portion of the Gulf States. Its depredations are most severe in Alabama. In most of the infested districts its reproduction was too late to destroy more than the top crops.

The September gale prostrated much of the crop of Dinwiddie County, Virginia, and the injury from the storm of September 17 was considerable throughout the tide-water region of the Carolinas. For two weeks following there was an excess of rain in this region. It is stated that the ground in Bertie, North Carolina, was whitened with the staple detached by the violence of the storm. In Warren and Duplin the damage from the equinoctial storm, 15th to 17th of September, is estimated at 20 per cent.; and the loss is large in Lenoir, Pitt, Wayne, Bladen, Beaufort, Edgecomb, Greene, Chowan, and Camden. Rust is prevalent in Wilson and Greene. Picking progressed slowly in North Carolina in consequence of the continuance of bad weather. The pickers in Pitt exhibit positive disinclination to work at the ruling price, 40 cents per hundred. The bolls are opening rapidly in South Carolina, and the top crop will be light. There is some complaint of rust; there has been injurious drought on these uplands, and loss from floods in the bottoms. The caterpillar is reported in Richland. Sea Island cotton in Beaufort is yielding better than last year.

Caterpillars appeared about the middle of July in Liberty County, Georgia, and stripped the plants of leaves, but not so early as to materially injure the yield. Some damage by the caterpillar is reported in Early County and in Muscogee. The principal causes of deterioration were drought, rust, mud and rain. There is much complaint of deficiency of the top crop. In Carroll it is stated that the loss by shedding bolls will be 50 per cent. In some counties favorable weather for opening and gathering is reported, as well as superiority in quality of fiber. It was thought in Oglethorpe that the crop would all be open by the 15th of October, and in Columbia by the 1st of November. In other counties there was little to open at the date of the return.

Caterpillars have reduced the yield in Florida, notably in Columbia. The ripening has been early—"premature," as the records have it. The Gadsden reporter represents the harvest as nearly over, with a product 30 per cent. less than a full yield, and says he has never known, in an experience of 50 years, a crop to be housed so early by a month.

The caterpillar has been somewhat destructive of the top crop in portions of Alabama. The loss is estimated at 50 per cent. in Conecuh; at 40 in Hale, (50 in the southern portion,) where the fields were swept by the invasion as early as the 1st of September. Among the counties mentioning especially the ravages of worms, are Autauga, Baldwin,

Bullock, Coffee, Chickasaw, Chambers, Monroe, and Macon. Drought is reported as the cause of reduced yield in several counties.

The causes of injury in Mississippi are worms, drought, wet weather, and frosts. Late cotton will be seriously injured by worms in Grenada and Choctaw. In Hancock, Paris green was used successfully against the caterpillar. A frost, sufficiently severe to do some injury, is reported in several counties. Injury from wet weather is reported in Hinds, Choctaw, and in other counties.

The crop is injured in Louisiana very generally by drought—continuing in Jackson for ten weeks, causing rust, shedding, and premature opening; 75 per cent. of the product was in readiness for harvest at the first picking. The caterpillar is doing some damage to the top crop.

A favorable season for picking is reported generally in Texas. Picking is progressing very rapidly, and in some counties drought will reduce the length of the harvest period. The loss from drought is placed at 50 per cent. in Bexar. The top crop in Bell is nearly destroyed by grasshoppers, and in Dallas their injuries are serious. The boll-worm is reported in Red River and Rusk.

Fine weather for picking, a heavy growth, a tendency to run to weed in rich lands, more or less injury from drought in light soils, and early ripening are indices of the state of the crop in Arkansas. The boll-worm has been destructive in several counties; more so than ever before in Franklin County. A frost occurred on the 1st of October.

Late cotton has been injured by frost in Tennessee. The season has been fine for ripening and gathering, picking is one to two weeks early, and the harvest will be completed at an early date.

Finally, the general harvest is more advanced than usual; the season is generally favorable for picking; the later pickings will be comparatively light; the causes of injury are not unusually excessive, drought being somewhat prominent in the Gulf States, the September storms on the Atlantic coast, the caterpillar in Alabama especially, and the boll-worm in Arkansas. The season promises to be much shorter than last year; there is less vigor and thrift for future development of fruitage in case of a prolonged season like the extraordinary one of 1875. Though the indications of condition-reports of this Department up to October pointed to four and two-thirds millions of bales last season, there was proved to be a deficiency of lint to seed in the ginning, and other unfavorable indications, which would have limited the crop inevitably to four and one-third millions, but for a full month's delay of killing frost in the Gulf States, fields being green in a large belt up to December 8th. The future of the present season cannot make the crop a deficient one, but will determine how near to the large one of 1875 the result shall come.

POTATOES.

Returns from Maine indicate a fair crop in yield and quality, with the prospect of very remunerative prices. In the other Eastern, and in the Middle States, the condition was largely reduced by a general drought, beginning early in August and protracted into September. The beetle has injured the crop extensively in New York, and occasionally in all the other States of this section, except Maine. In Indiana, Pennsylvania, the crop is rotting badly in the ground; Elk had almost a failure in yield, with excellent quality; Lycoming, a like deficiency in yield with very poor quality; Cambria, a large growth of vines, but not more than 75 or 80 bushels per acre; Sullivan, small and

immature potatoes, the vines having died prematurely. In Armstrong, early potatoes were extra good, but late, few and small. In New York the average condition is reduced to 65. New Jersey returns 73; Pennsylvania, 68; Vermont and Maryland, 83. In Frederick, Maryland, potatoes sold one year ago as low as 20 cents per bushel; now the price is 70 cents, and advancing. In Virginia the later crop was, to a considerable extent, killed in the germ by early drought. Dinwiddie reports that not 10 per cent. of the late planted came up; the condition in the State averages 88. In the remaining section south of the Potomac and the Ohio, in which the Irish potatoe is a minor crop, the average condition is not much, if any, below 100. Local extremes of high and low condition are included in this general average. In Beaufort, N. C., the late crop is almost a failure from rotting; in Arkansas, Garland reports a complete failure, but Izard an abundant crop. In Gibson, Tennessee, the crop is almost a failure; and in Montgomery, "used up by drought and the bugs;" but the State averages 100.

North of the Ohio, returns confirm the indications in the September reports of a comparatively poor crop in both yield and quality. In addition to the reductions by unfavorable weather, and by the beetle, previously reported, damages from blight are noted in Franklin, Ohio, and Fond du Lac, Wis.; from rotting, in Chippewa, Mich., and Grant, Brown, and Clark, Wis. In Henry, Ohio, the price is 70 cents per bushel, against 20 cents last year; in Delta, Mich., a first-rate crop sells at 50 cents per bushel, wholesale; in Noble, Indiana, a crop less than 25 per cent. of an average, at $1.25 per bushel. The average condition in Michigan is 55; Ohio, Illinois, and Wisconsin, 83; Indiana, 89. West of the Mississippi the condition is higher, but the promise is somewhat below an average crop. In the latter part of the season grasshoppers have been the most general cause of reduction in the States and Territories between the Mississippi and the Rocky Mountains. The lowest condition in this section is 81, in Kansas; the highest 96, in Minnesota. Rot is reported in Alamakee, Marion, and Lee, Iowa; and in Greene, Missouri, "the early potatoes are all rotting at one end."

On the Pacific slope, California reports a condition 7 per cent. above average, or higher than that of any other State in the Union. Oregon falls to 94. In Utah the crop has been extensively damaged by early frosts.

The entire returns, with their various local specifications concerning actual or prospective yield and quality, point to a short crop, with great variations in quality, and with high prices. The average of condition for the entire country is 77.

SWEET POTATOES.

Returns give promise of a full average crop of good quality. On the Atlantic coast, from New Jersey to South Carolina inclusive, the condition ranges from 104 to 97. It has been reduced in Georgia to 91; Florida, 84; and Alabama, 87, by a general and protracted drought. In Mississippi the drought was severe and disastrous to the crop in localities, but being less general in extent, the condition falls only 2 per cent.; in Louisiana, the same cause brings it down to 88. Texas averages 96; Coryell reports the best crop ever raised, all in fine condition; Upshur, a yield equal to that of last year, with an increase of 100 per cent. in acreage; Bexar, a failure of the crop from a drought of three months' continuance. The condition is 90 in Nebraska, and 94 in Illinois; but in all the remaining States, in which the crop is of any account, the range is from 98 in Indiana and Kansas, up to 109

in Tennessee and California. There is scarcely an exception to favorable returns respecting quality, so far as it is referred to.

SORGHUM.

Nearly all the States which grow sorghum to any considerable extent, report a condition averaging above 100; South Carolina, 101; North Carolina and West Virginia, 103; Alabama, Mississippi, and Nebraska, 104; Texas and Ohio, 105; Georgia, 107; Tennessee and Kentucky, 109. Madison, Virginia, reports the largest crop ever raised. In Georgia, the return from Gwinnett states that the crop has become an important one in the county, and that growers, with "the improved evaporator," are making sirup equal to the best New Orleans; Stewart, that a good crop, matured before the drought came on, has been about all ground up; Jackson, that since the introduction of evaporators, sirup superior to any other is made, and that the crop will make thousands of gallons; Hart, that the crop is sufficient to make 10,000 gallons of sirup.

In Alabama, Conecuh reports that the crop, well matured, this season, is more or less grown upon every farm, and is conferring great benefit on the poorer classes. In De Kalb the quantity is above average, and the quality far superior to that of any previous crop; in Clay, the crop is very good, and is becoming one of the important industries; in Covington, is grown in large quantities, and found to be very profitable, promising to supersede sugar-cane.

In Texas the condition improved in September; Coryell returns 130; in Rusk, about 30,000 gallons of sorghum sirup have been made. The sirup sells for 50 cents per gallon. "Sorghum will henceforth be a staple product of the county." In Arkansas, Fulton reports that the black-top variety was injured by rust, while other kinds escaped. In Tennessee, Monroe reports that "sorghum mills and evaporators are the order of the day;" also that sirup from the red-top variety is "very superior." In Blount the abundant crop was never excelled. In Allen, Ky., an unprecedented quantity of sorghum molasses will be manufactured. In Henry County, Ohio, more has been grown than for the last three years. In Jefferson, Illinois, the crop exceeds all previous ones, and the cane is very rich in juice.

TOBACCO.

Cheshire and Sullivan in New Hampshire, Berkshire and Hampshire in Massachusetts, and Hartford and Litchfield in Connecticut, all being principal tobacco counties, return each a condition of 100. In New York the largest tobacco county, Onondaga, returns 70; other counties range from 75 to 100. In Pennsylvania, Lancaster reports that a larger crop than ever before has all been housed in good condition. In York, the next in importance, the condition is 110. Cumberland, 90, (producing but little) is the only county below 100.

In Maryland the condition averages about 82. Prince George, the heaviest county, is reported at 90. Returns from Calvert and Montgomery state that the quality will be inferior. The crop was considerably damaged by the equinoctial storm.

In Virginia, the average condition returned September 1 was 65. During the month the progress in some localities was counterbalanced by damages from storms and depredations by worms in others, so that the general condition October 1 averaged about the same. Pittsylvania,

first in production, returns 50 per cent. of an average condition; Halifax, next, 70. In the latter, and in Franklin, 55, and Dinwiddie, 50, the crop has suffered greatly both from the severe equinoctial storms and the depredations of worms. In Mecklenburg, 66, the crop is so late that much of it must be cut before maturing. Some of the counties producing smaller quantities, as Montgomery and Carroll, report that the crop has been housed in superior condition. As a rule the lighter counties are higher in condition than the heavier, many of them reaching 100.

In North Carolina the average is 73. In Caswell it has been reduced to 80 by unprecedented ravages of the horn-worm. In Rockingham, 35, the crop is very late and exposed to damages by frost. Orange returns 33 in yield, but fair in quality. As in Virginia, a higher condition is generally returned in counties producing small quantities.

Tennessee averages 91, an advance of 11 per cent. in September. The figures in some of the important counties are: Montgomery, 80; Henry, 85; Smith, 95; Weakley and Dickson, 100; Obion, 110; Macon, 125.

In West Virginia a high condition is reported, averaging 106. Among the returns, only two small counties, Lewis and Pleasants, each 90, fall below 100. Among the more important returns are: Kanawha, 105; Putnam and Cabell, 100; others range from 100 to 125.

Kentucky reports an advance in condition during September from 77 to 83. General exemption from insect depredations and very favorable conditions of weather combined to effect this result. Daviess reports a promise of the best crop ever made, and the largest except that of 1872. In Webster, Breckinridge, and Warren the crop has been nearly all housed in good condition. In Lewis the yield and quality exceed the capacity of tobacco-houses for successful handling. In Owen this has been the best year in the last twelve for the crop. In Christian and Hopkins the condition is 100. In Bracken the yield is 100, but the early cut was much injured by damp weather, causing it to rot in the barns. In Graves, the yield is but 40, but the quality good, and nearly all is housed. Simpson has not more than 25 per cent. of a crop. Ohio has many very trashy crops. In Metcalf a large part is too late to mature. In Pendleton the stem of a considerable portion has rotted in the barn, causing the leaves to fall off. Russell is the only county reporting injury from frost.

In Ohio the average condition advanced, in September, from 97 to 104. Montgomery, the leading tobacco county, reports an extra crop of seed-leaf; Preble, that the crop has been secured "in splendid condition." In Monroe, the crop has suffered from wet weather; that county and Richland (in which the production is small) are the only ones, among thirteen, returning tobacco below 100.

In Indiana, Warrick reports a condition of 110, and Pike 120. These counties grow half the crop produced in the State. Among twelve returns, all, except two unimportant ones, are 100 or above.

The month of September was also very favorable to the crop in Missouri. The returns indicate a surprising improvement in condition—advancing from 87 to 107; Howard and Lincoln return 125; Carroll, Stoddard, and Macon, 110; Montgomery, 75, is the only important county reporting below 100.

THE PEA CROP.

Acreage.—The States indicating an increase in acreage, compared with last year, are Oregon, 2 per cent.; Virginia, Arkansas, and Kentucky, 3; Florida, Texas, and California, 4; Michigan and Minnesota,

8; Nebraska, 16; Ohio reports a decrease of 14 per cent.; Mississippi and Louisiana, 10; Alabama, 9; Wisconsin and Iowa, 7. In the remaining States the variations from the acreage of the previous year are slight.

Condition.—In Connecticut, Maryland, West Virginia, Kentucky, Minnesota, and Nebraska, the condition averages 100; in California, 101; the remaining States, below 100. The lowest is in Louisiana, 81; the next in order of ascent are Mississippi, 84; Alabama, 85; Georgia, 86; Florida, 89; Pennsylvania, 91; Illinois and Iowa, 93; New York, Texas, and Wisconsin, 95. A general and protracted drought was the main cause of reduction in the Gulf States.

BEANS.

The only States in which the condition does not fall below 100 are, New Jersey, Delaware, and Oregon, 100; California, 103; Vermont, 104; and South Carolina, 107. Grasshoppers were very destructive to the crop in the section visited by them. Rust is reported in Androscoggin, Maine, excessive wet weather in Guthrie and Marion, Iowa, and drought in some other localities. The States returning the lowest averages are Nebraska, 65; Alabama, 76; Iowa, 79; Minnesota, 81; Maryland and Illinois, 84; Rhode Island, 87; Connecticut, 90; New York, 91. The other States range between 92, in New Hampshire, Pennsylvania, and Ohio, and 99 in Virginia, West Virginia, Tennessee, and Wisconsin.

FATTENING CATTLE.

The numbers of fattening cattle are apparently somewhat less than last year, though the difference is small. Maine and Vermont, most of the Southern States, and especially the States of the Missouri Valley, return increasing numbers; while the returns from the Middle and Central Western States are uniformly below 100. Their condition is very generally higher than the returns of condition last year, the principal exceptions being in New York, New Jersey, and in New England.

Table showing the condition of the crops, &c., on the first day of October, 1876.

States.	WHEAT.		RYE.		OATS.		BARLEY.		BUCK-WHEAT.	CORN.
	Product compared with last year.	Average quality compared with last year.	Product compared with last year.	Average quality compared with last year.	Product compared with last year.	Average quality compared with last year.	Product compared with last year.	Average quality compared with last year.	Average condition October 1.	Average condition October 1.
Maine	101	96	96	98	94	99	94	97	95	98
New Hampshire	93	94	90	97	87	95	88	95	92	103
Vermont	92	102	98	104	94	96	98	96	93	97
Massachusetts	100	100	100	105	96	90	93	98	80	100
Rhode Island	.....	.....	90	100	82	92	75	100	100	102
Connecticut	100	100	106	105	99	86	102	102	93	110
New York	114	98	93	97	83	89	84	93	77	91
New Jersey	99	104	99	101	99	99	.....	.....	84	90
Pennsylvania	99	104	97	99	102	97	92	98	85	93
Delaware	105	100	100	100	109	100	.....	.....	50	100
Maryland	112	102	100	99	99	95	.....	.....	88	100
Virginia	108	106	99	101	97	100	.....	.....	100	97
North Carolina	85	97	99	98	94	100	.....	.....	99	93
South Carolina	84	93	105	104	126	104	.....	.....	.....	100
Georgia	64	85	100	99	115	106	102	99	.....	111
Florida	.....	.....	101	98	107	94	.....	.....	.....	90
Alabama	68	77	97	93	100	96	.....	.....	.....	105
Mississippi	70	90	86	95	97	97	.....	.....	.....	94
Louisiana	100	93	100	100	104	95	.....	.....	.....	99
Texas	70	89	89	99	91	99	99	97	.....	119
Arkansas	62	79	81	85	55	77	83	92	106	108
Tennessee	84	93	94	97	94	95	91	96	92	103
West Virginia	129	117	105	104	113	109	.....	.....	96	101
Kentucky	106	124	102	116	103	112	100	125	100	111
Ohio	105	121	101	107	102	105	96	103	101	107
Michigan	92	92	89	99	85	92	96	97	86	88
Indiana	100	123	98	108	92	97	94	103	97	102
Illinois	82	97	92	98	61	66	73	72	95	94
Wisconsin	62	80	92	96	79	82	87	85	101	110
Minnesota	60	101	96	105	77	87	78	102	82	108
Iowa	62	105	95	101	76	73	88	96	94	105
Missouri	106	108	100	102	64	48	98	100	94	95
Kansas	97	102	113	101	49	63	105	101	86	100
Nebraska	110	118	142	102	76	75	125	112	75	109
California	100	100	103	100	100	100	114	101	100	97
Oregon	86	92	93	94	92	98	94	97	98	106

Table showing the condition of the crops, &c., on the 1st day of October, 1876—Continued.

States.	POTATOES, (*Solanum tuberosum.*)	POTATOES, (*Batatas edulis,*) SWEET.	TOBACCO.	BEANS.	PEAS.		SORGHUM.	SUGAR-CANE, (not sorghum)	COTTON.	OLD WHEAT.	FATTENING-CATTLE.	
	Average condition October 1.	Average condition October 1.	Average condition October 1.	Average condition October 1.	Acreage compared with last year.	Average condition October 1.	Average condition October 1.	Average condition October 1.	Average condition October 1.	Average amt of old wheat in your county compared with last year. (Answer in *hundredths* as with other questions.)	Average number of fattening cattle compared with last year. (Answer in *hundredths* as with other questions.)	Average condition October 1, compared with last year.
Maine	98	.....	.....	98	100	96	.....	.....	.....	100	103	96
New Hampshire	83	.....	100	92	98	98	.....	.....	.....	96	95	92
Vermont	89	.....	.....	104	98	97	.....	.....	.....	96	106	96
Massachusetts	66	.....	106	97	.....	.....	.....	.....	.....	.....	93	97
Rhode Island	44	.....	.....	87	.....	.....	.....	.....	.....	.....	70	90
Connecticut	53	.....	101	90	100	100	.....	.....	.....	102	91	86
New York	65	.....	92	91	97	95	.....	.....	.....	78	95	94
New Jersey	73	104	.....	100	.....	.....	.....	.....	.....	79	98	93
Pennsylvania	68	97	100	92	98	91	.....	.....	.....	88	98	100
Delaware	30	100	.....	100	.....	.....	.....	.....	.....	100	105	100
Maryland	83	97	82	84	98	100	.....	.....	.....	71	97	99
Virginia	88	99	65	99	103	98	105	.....	97	99	99	103
North Carolina	96	97	73	98	97	98	103	.....	84	91	101	104
South Carolina	105	98	.....	107	99	96	101	105	80	97	103	108
Georgia	100	91	94	97	98	86	107	91	88	85	101	102
Florida	83	84	87	94	104	89	97	88	80	.....	100	99
Alabama	100	87	102	76	91	85	104	97	69	76	103	104
Mississippi	94	98	86	96	90	84	104	106	83	.....	103	103
Louisiana	.....	88	.....	.....	90	81	.....	94	82	.....	95	101
Texas	93	96	99	95	104	95	105	101	91	81	103	103
Arkansas	95	102	94	94	103	98	98	.....	86	105	93	102
Tennessee	100	109	91	99	100	99	109	.....	71	93	100	107
West Virginia	92	102	106	99	100	100	103	.....	.....	95	96	103
Kentucky	98	105	83	98	103	100	109	.....	.....	99	100	106
Ohio	83	100	104	92	86	90	105	.....	.....	73	98	104
Michigan	55	41	.....	96	108	97	90	.....	.....	68	96	102
Indiana	87	98	110	96	.....	.....	99	.....	.....	69	96	107
Illinois	83	94	99	84	100	93	95	.....	.....	73	94	106
Wisconsin	83	.....	106	99	93	95	99	.....	.....	74	99	104
Minnesota	96	.....	.....	81	108	100	106	.....	.....	92	102	103
Iowa	84	99	104	79	93	93	99	.....	.....	82	94	105
Missouri	95	98	107	95	98	96	98	.....	93	89	93	105
Kansas	81	99	102	94	100	96	97	.....	.....	87	110	102
Nebraska	84	90	100	65	116	100	104	.....	.....	110	113	109
California	107	109	97	103	104	101	.....	.....	.....	92	120	110
Oregon	94	.....	97	100	102	97	.....	.....	.....	93	106	105

EXTRACTS FROM CORRESPONDENCE.

A GOOD DAIRY REGION.—*Illinois.—Ogle:* Prof. J. Wilkinson, of Baltimore, Maryland, has been engaged recently at Byron, in this county, constructing a dairy-house or butter-factory, on his subearth cooling and ventilation system, with a capacity for manipulating the milk of four hundred cows. This dairy is for Messrs. Israel Boeis & Son, late of Marengo, McHenry County, who are experienced dairymen, and who, after riding thousands of miles prospecting for the most favorable locality for a butter-dairy, have given this place the preference. Professor Wilkinson, in the Germantown Telegraph, also says:

I have now inspected this locality (Ogle County) with great care, and I am constrained to give it the preference over any other locality that I have ever seen for conducting the dairy business; that is, the manufacture of butter and cheese. The country is rolling, and to the most desirable degree that I ever saw. There is quite a variety of surface-soil, the dark, deep, naturally-drained fertile loam prevailing. It is generally rather light for wheat. From one-third to one-half of the area (near Byron) is wooded, the prevailing trees white, black, and burr oak, white ash, hickory, and cherry. Blue and green grass and white clover are the chief spontaneous grasses, and there is scarcely a place to be found, whether in a natural state or such as has been cropped, where there is not a fine dense sward of these grasses, except where, by slovenly tillage, rag-weed has overgrown everything else. Such rag-weed I never saw—four to seven feet high is common. Red clover grows most luxuriantly, and timothy flourishes in the nearest level portions, as the soil there is more clayey.

This is correct, and in accordance with my own views as to the natural advantages of this locality for the dairy business.

WINTER GRAIN.—*New York.—Schoharie:* Wheat and rye look fine. *Onondaga;* Wheat looks finely, and has made a fine growth. *Montgomery:* Abundant rains are giving newly-sown wheat a splendid start.

Pennsylvania.—York: The late, continued heavy rains have delayed seeding at the usual time. *Bedford:* Much of the fall sowing is yet to be done; excessive rains have delayed it very much. *Lawrence:* Wheat was sown early and looks well. *Blair:* Have had continuous rains for the last three weeks, consequently much of the seeding must be done late. *Lebanon;* The fall seeding is all done, and the grain is up; the stand is very fine. *Washington:* In some places the grub-worm is working very badly on the wheat in the ground; much wheat has been seeded very late, on account of continued rains, and farmers are not done seeding yet, October 6.

Delaware.—Kent: The heavy rains for the last two weeks have put the farmers back in sowing wheat.

Maryland.—Prince George's: Seeding of wheat has scarcely yet commenced. *Queen Anne:* Wheat-seeding has been greatly retarded by the frequent rains; very little is yet in the ground. *Harford:* Very little wheat sown yet; continued wet, following extremely dry, weather is keeping the farmers back. *Howard:* Protracted rains have postponed wheat-seeding two weeks; it will be very late.

Virginia.—Culpeper: Seeding will be late, the farmers very much behind, owing to excessively wet weather. *Loudoun:* Farmers will be backward in putting in wheat. *King George:* The rains in September have been excessive, and have retarded the sowing of wheat; none has yet been sown. *Mecklenburgh:* Spring oats having proved a failure many years, winter oats have been extensively sown this fall. *Roanoke:* A large crop will be put in this fall. *Fairfax:* A less breadth of wheat will be sown than last year, owing to low prices; the prevailing belief

is that there is no profit in raising wheat under $1.50 per bushel; Fultz wheat is still the favorite, though more Lancaster will be sown than last year. *Richmond:* Wheat-seeding has been delayed by constant rains; little or no grain sown yet.

North Carolina.—Alleghany: The farmers are about done seeding; the weather has been very favorable, and the small-grain crop is looking fine.

Georgia.—Carroll: Large crops of small grain will be sown this fall, and that is the only way to save this county from utter ruin. *Dooly:* Little sown yet, but that looks fine. *Harris:* People talk of planting wheat and oats more extensively than ever before.

Florida.—Jefferson: The prospect is that a large area will be sown in oats this fall to make up for the deficiency in the corn crop.

Texas.—Bowie: Small grain has not been put in yet, the weather being too warm and dry. *Williamson:* The farmers are very busy in sowing wheat, oats, rye, and barley.

Arkansas.—Baxter: Have just commenced sowing wheat, but the weather is so dry that slow progress is made, and seed is very scarce; the crop must fall short again next year. *Prairie:* During the latter part of August and all of September no rain fell; this has interfered with the preparation of the land, and has prevented the sowing of wheat. *Sebastian:* More wheat is being sown than usual. *Washington:* Very little wheat is yet sown, as the ground is too dry. *Izard:* Very little wheat or rye yet sown, owing to the drought.

Tennessee.—Giles: Cannot prepare stubble-land for wheat until we have rain. A larger acreage will be sown this fall than ever before.

West Virginia.—The very wet weather has delayed the farmers in sowing their wheat; that sown has come up well. *Randolph:* September was too wet to seed.

Kentucky.—Crittenden: The present indications are that more wheat than usual will be sown this fall, and that greater pains will be taken in the preparation of the soil. Drills are being introduced.

Ohio.—Tuscarawas: The farmers are favored with a fine fall for putting in their seed. *Henry:* The acreage of the growing wheat crop is larger than last year. It is mostly drilled, and looks unusually well. *Montgomery:* Seed-wheat was put in the ground in excellent condition—better than for many years—and the weather is fine for the growing wheat. *Preble:* The wheat sown this autumn is in very high condition. *Medina:* It has rained nearly every day the past month; much of the wheat is not yet sown, and many farmers will not sow at all. *Fairfield:* The acreage of wheat sown is increased 25 per cent. *Belmont:* A large portion of the wheat has not yet been sown, owing to the wetness of the ground.

Michigan.—Tuscola: A large amount of wheat has been sown, and nearly all was put in before the 10th of September. The new crop looks very fine. *Barry:* Wheat looks well, but the fly is eating the early sown quite badly. *Wayne:* The new crop of wheat never looked better.

Indiana.—Dearborn: The prospect for the wheat sown this fall is poor. The ground is dry, the month of September has been cold, and the grasshoppers have eaten a great deal as fast as it came up. *Decatur:* An increased acreage of wheat has been sown. *Marion:* The newly-sown wheat is getting a very fine start. *De Kalb:* The growing wheat never looked better. *Warren:* Wheat never looked better. *Ripley:* September has been a favorable month for sowing wheat, and the farmers have improved the opportunity to get it in early. That which has come up looks well.

Illinois.—Monroe: The season has been so wet that plowing for winter wheat is very backward; not much sown yet, but a few fields are up and looking well. *Hancock:* An increased area of wheat is being sown. *Jefferson:* The breadth sown exceeds that of last year nearly 33 per cent.

Missouri.—Camden: The weather is remarkably fine for farm-work; three-fourths of the wheat is sown. Early-sown wheat never looked better. Rye is also A No. 1. *Cole:* The weather was never more favorable; we have finished sowing wheat, and have increased the acreage 20 per cent. *Moniteau:* The past month has been very favorable for fall work, and a very large breadth of wheat has been sown, in splendid order. *Holt:* The new wheat and rye in the upper part of the county have been nearly all destroyed by the grasshoppers. *Saint Genevieve:* The ground is in remarkably fine condition, and wheat-sowing has been progressing rapidly since the 15th of September. *Platte:* Commenced seeding about the 10th of September. The growing wheat is looking well, the weather being favorable to its rapid growth. *Boone:* The favorable weather has enabled the farmers to put in their wheat in fine condition; but having failed for two consecutive years to raise much wheat, they have not been disposed to sow as much as usual.

Kansas.—Brown: The grasshoppers have destroyed about all the wheat, rye, and timothy that have come up, and will doubtless destroy all that has been sowed. The farmers have stopped sowing, owing to their presence. *Sedgwick:* The grasshoppers alighted on the 1st of September, not in such numbers as two years ago, but enough to eat all the young wheat and rye as fast as it appears. Many of the farmers are still sowing wheat. *Bourbon:* The grasshoppers appeared on the 28th of September, and are eating the wheat clean as they go. *Cowley:* The grasshoppers have taken all the early-sown wheat and rye, and they are still with us; they keep us from sowing wheat. *Douglas:* Owing to the prospect of another grasshopper raid, but little wheat was sown until within two weeks; the early sown looks fine. *Woodson:* Grasshoppers came on the 9th of September by the million, and have destroyed all the early-sown grain. *Chase:* The grasshoppers came September 9, and the wheat that had been sown is all destroyed. *Lyon:* The fall sowing of wheat and rye has all been devoured by the grasshoppers. *Osage:* On the 9th, 10th, and 11th of September, the wind from the northwest brought billions of grasshoppers, and consequently all the small grain is a total loss. *Reno:* The farmers are still busy in sowing wheat; some ground is being planted for the third time; only about half the area will be sown that would have been if the grasshoppers had not come; all the early sown was entirely killed. *Shawnee:* The grasshoppers have eaten about half of the wheat and rye sown; the farmers are sowing these grains over again. *Washington:* The farmers are now busy in sowing fall grain; we do not fear the grasshoppers in the spring, for the farmers will plow all they can this fall and winter, with the expectation of killing the grasshoppers in the egg. *Saline:* All wheat sown before the grasshoppers came has been destroyed by them; some farmers have lost 200 acres, and one has lost 1,200.

Nebraska.—Richardson: The grasshoppers are thick here, and have taken all the fall sowing. *Pawnee:* Winter wheat and rye are all destroyed by the grasshoppers.

DISEASES AMONG FARM-STOCK.—*Maryland.—Worcester:* In one small section, within a few days, a very fatal disease has broken out among cattle, supposed to be Texas fever, communicated by a drove from the South, which passed through.

Virginia.—Powhatan: Some cattle have died from murrain, but the number is limited.

North Carolina.—Rowan: The cholera is killing many hogs.

Florida.—Suwannee: Hogs of improved stock have not suffered as much from disease as others, perhaps owing to the better care.

Louisiana.—Cameron: Cattle and horses continue to die from charbon and murrain; also from what is here known as blind and sleepy staggers. It is estimated that 10 per cent. of the gentle horses and of the cattle have died of the above diseases during the season.

Arkansas.—Izard: A small per cent. of the cattle have had the disease called black tongue, and a few have died. It has been more fatal among the wild deer.

Kentucky.—Graves: Hog-cholera prevails in many localities. *Pendleton:* A few hogs are dying with cholera.

Ohio.—Henry: A very fatal disease, not properly cholera, is prevailing among hogs and pigs. The symptoms indicate spinal meningetis, together with glandular enlargement, especially about the throat. Chorea or Saint Vitus's Dance and convulsions are prominent symptoms. All the small pigs die with it; some of the older ones survive. No remedy is known. A distiller has lost 450; one farmer, 23 out of 60; another, 42 out of 60; another, 34, being all he had; and the losses are in like proportion through the neighborhood. A marked feature is that it causes abortion in all pregnant sows attacked with it.

Indiana.—Steuben: Several cases of hog-cholera are reported.

Missouri.—Johnson: The cholera is making sad havoc with the hog-crop; from 25 to 32 per cent. of the hogs in the county have died within a month. *Moniteau:* Hog-cholera still prevails alarmingly. *Lincoln:* There is a new disease among hogs. They are taken with a sleepy look, the eyes become inflamed, and they finally become blind; the skin becomes scabbed over, the scabs hard and dry. If killed in the last stage, the lungs are black. Some die in a few days and some live two weeks. One farmer boiled poke-root, mixed with bran, fed freely, and has had no new cases since trying it.

NUTS.—*Virginia.—Floyd:* The crop of chestnuts and acorns is more abundant than ever before known. There is more mast than hogs to eat it. *Highland:* We have much mast and the hogs are fattening in the woods.

West Virginia.—Raleigh: The oak and chestnut mast is fine; hogs fatten on it. *Boone:* Oak mast is most abundant, equal to half a crop of corn for hogs. *Greenbrier:* We have a good mast; in many places it will be sufficient to fatten the hogs and to winter the stock-hogs.

Kentucky.—Owsley: We have the finest oak mast for years; but hogs are very scarce. *Lewis:* The mast has not been so heavy for years. *Laurel:* There is a good mast. It will be worth one-tenth as much as the corn crop. *Clinton:* The oak mast is very abundant, enough to keep all the stock-hogs in good condition nearly through the winter. *Russell:* We have a splendid oak mast. Hogs will fatten on it, and will keep in good condition all winter. *Crittenden:* The hickory and oak mast is abundant, more than sufficient to fatten all the hogs in the county.

Illinois.—Jefferson: The quantity of all kinds of mast is enormous.

Missouri.—Camden: Mast is abundant and stock-hogs are "in clover." *Perry:* The abundance of acorns will make up the deficiency of 25 per cent. in the corn crop.

GRASSHOPPERS IN TEXAS.—*Palo Pinto:* The grasshoppers appeared

on the 17th of September, and are as thick as they ever were here, destroying everything as they go. *Uvalde:* Appeared September 22 in quantities, arriving from the north, and causing some alarm. *McLennan:* Reached here on the 20th of September, and have materially damaged the cotton crop by cutting off unripe bolls. *Bell:* Made their appearance in great numbers about a week since, and are destroying all gardens and every sward of grain. They have cut off the late corn and the young bolls on the late cotton. *Dallas:* Have cut short the cotton crop. *Gillespie:* The first grasshoppers arrived on the 18th of September. Three days later they left, going west, being driven by an east wind.

LABOR.—*South Carolina, Colleton:* Labor is plenty and excellent. There is no trouble in getting it if one is willing to pay for it. A plenty of good farm-hands can be had at 50 cents per day, without board.

Florida.—Gadsden: The necessities of the freedmen, which have been extremely stringent this year, brought out the women and half-grown boys and girls, and consequently there has been no lack of pickers. *Jefferson:* Labor is good, and not much diverted by politics from gathering crops.

Mississippi.—Monroe: Labor is working well, and if the weather continues favorable we will have no cotton in the fields by the 1st of November. *La Fayette:* The labor is not quite so much demoralized by the electioneering as we had feared.

INJURIES FROM DROUGHT.—*Pennsylvania.—Northampton:* I am safe in saying, not only that the great drought has destroyed the potatoes, grass, and corn, but the great heat ripened our wheat in a few days, so that fully one-third of the crop was lost in gathering by being shelled out and left upon the field. In nine-tenths of the county, the young clover and timothy, which had a good start in the spring, have been killed outright, making an unpromising prospect for a hay-crop next year. Many pieces of young clover and timothy look like open fallow. Such heat and drought have not been known previously within the memory of the oldest inhabitant. This has been, upon the whole, the worst season for farmers in the county since its organization, over one hundred years ago.

A NEW PROCESS OF UTILIZING COTTON.

BY THE COMMISSIONER.

Any process which will facilitate and cheapen the manufacture of cotton possesses an interest which must command the attention of the people of this country, where alone this fiber is most successfully produced. The invention of the cotton-gin was a prodigious step forward to promote the increased production and profitable employment of the cotton-planter; and now the ingenious mechanic proposes another step forward in aid of this all-important industry, by "a new process for converting seed-cotton directly into yarns;" whereby the use of the "gin" will be entirely superseded, and each step of converting the cotton, as it comes from the field, greatly cheapened. We take this mode of calling public attention to the subject, and to invite a strict scrutiny into the merits of the proposed improvement.

The following views upon this subject are presented in a letter from F. E. Whitfield, sen., of Corinth, Mississippi:

By the new process of converting seed-cotton directly into yarns only four machines are used, viz, the card, drawing-frame, speeder, and spinning-frame, (such as are now in common use;) the card only is changed, and that slightly, by substituting an attachment for the lickerin, at a cost of about $300.

The attachment receives the seed-cotton, gently removes the seed, combs out the dust, trash, motes, &c., and delivers the filaments, untangled, and parallel, to the card; thus superseding the gin, press and compress, (which are only used to render cotton transportable,) the willower, lapper, double lapper, breaker, and four-fifths of the cards, which are only intended to try to remedy the injury done by the gin, press, and compress. It also saves or supersedes the railway and railway drawing-head; also all jack-frames, slubbers, mules, twisters, eveners, &c., together with all the buildings, motive-power, and operatives to hold, drive, and attend said discarded machinery. It saves one-half the usual waste, and produces better and stronger sliver, roving, and thread than can be made of baled cotton; thereby enabling operatives to attend more machinery, and each machine to do more work, especially in the spinning and weaving rooms. The reason why the card will do four times more by this process, using the same motive-power, is, the filaments are not permitted to leave the machinery, fly, or become tangled, but are kept straight, and carding is but the straightening of the cotton filaments. The extra strength of the thread is owing to the working of the cotton fresh from the seed, the oil of which has kept it alive, light, elastic, and flexible, with all its attenuating qualities perfect; and to the fact that it has never been napped, cut, or tangled by the gin, pressed, compressed, or permitted to become dry, seasoned, and brittle in this tangled condition, nor has it been injured by the willower, lapper, double-lapper, breaker, and cards, where the damage done by the gin, press, and compress is sought to be remedied.

This small attachment (only 36 inches long by 18 inches wide) supersedes the above mentioned eight machines, simply because the first three are used to render cotton transportable, and the last five are intended to remedy the damage done by the first three. But these advantages, great as they are, are not half that are claimed for the new process. The ginning, seed-bagging, and ties are saved.

Take a bale of cotton on a farm near Corinth, and see the expenses, &c., incurred in sending it, via Memphis, to Boston, Mass.: Hauling to Corinth, sampling, weighing, deduction of 2 to 4 pounds from weight; profits of purchaser, freights and insurance to Memphis, drayage to cotton-shed, storage, insurance, deep sampling, commissions for selling, brokerage for buying, deep boring, second weighing, repairs, drayage to compress, compressing, drayage to steamer or depot, freight and insurance to Boston. To these add waste, drayage, and stealage, all the expenses, speculations, and peculations of the guerrillas of the South and the great cotton rings of the North; add also the expenses in our sea-port towns, (where it is recompressed to be shipped to Europe,) the expenses and profits of the shipment, and the expenses after its arrival there until it is sold to the manufacturer, who buys only the net cotton, (not the bagging or ties,) at his own price. For Liverpool, Manchester, Leeds, &c., take the surplus crop of the world, fix and control the price, not only there, but in every cotton mart.

Europe, China, and India pay gold for cotton and cotton-fabrics shipped from Fall River, in Massachusetts, and other places. The planter gets receipts from his merchant for a year's supply of provisions, farm-tools, &c., and is fortunate if the receipts are in full to date, (the negro, for his share, over and above his scant food and clothes, gets jew's-harps and ginger-cake.) Who gets the difference in exchange between the nations, the margin of 14 per cent. between gold and national-bank notes? It probably is one of the perquisites of "middle-men," except in such instances as Fall River Manufacturing Company.

Now, if to all these you add the expenses, profits, &c., of the manufactured goods returned south, you will have some idea of what middle-men receive and what the new process will save to our impoverished but still beloved South land. For instance, take eight of the above twenty-five enumerated items of expense on cotton *in transitu* from the field to New England, viz, ginning, $4; bagging and ties, $2.50; freight to Memphis, $2; commissions, $1.25; brokerage, 75 cents; storage, 50 cents; compressing, 75 cents; freight to Boston, $6.25; total, $18 per bale. which, on 4,200,000 bales, amounts to $75,600,000. The item of seed is worth $5 per bale as a fertilizer, equal to $21,000,000, and decorticating more than doubles its value.

There can be no competition away from the cotton-fields, for seed-cotton will not bear transportation, and none other can be used.

The crop of 1875 is estimated at 4,400,000 bales, of which the South consumed about 200,000; the balance was shipped north and to Europe. The average price was probably about 10 cents per pound, or $50 per bale. The enhanced value of crude cotton when converted into yarns is estimated at from 100 to 125 per cent.; into shirting and sheeting, 200 per cent.; into prints, still more; and into fine muslins, 300 to 400 per

cent. These are gross profits; but, if the South made her own machinery, furnished her operatives, and fed them, they would be net to her.

The machine has run for five months steadily, giving entire satisfaction, making first quality of yarns, which sell readily in market here for 25 cents per pound, paying for seed-cotton from ½ to 3½ cents per pound. The only objection yet seen to it is that on the 1st of January it is necessary to hold eight months' supply of seed-cotton. This requires capital, but pays a large interest on it; for the seed-cotton lying in bulk six or twelve months greatly improves by the absorption of oil from the seed by the filaments, rendering them more attenuating or workable, giving them a rich cream-color, saving waste from flying in working, and enhancing the value of the staple fully 1½ cents per pound, while baled cotton deteriorates nearly as much in the same time. These are facts which some have long known and profited by as planters.

The South has many and important natural advantages over the Northeast and England in manufacturing cotton, such as short, mild winters; more reliable water-power; cheaper land, building-materials, fuel, food, and labor; exemption from strikes; and direct reclamation. It would furnish pleasant, remunerative employment to her indigent women and children, (unwilling to enter the field in competition with the negro,) and, assembling them in villages around factories, would afford much greater facilities for physical, mental, and moral training of children, creating a market for edibles, and an incentive to farmers around to diversify their products.

One attachment, with the necessary machinery to convert seed-cotton into yarns put up in bales, will require 10 or 12 horse-power to drive and from six to eight operatives (mostly boys and girls) to attend it, and will work up from ¾ to 1 pound of seed-cotton per minute, or 200 to 220 pounds of yarns per day, and will cost, with royalty, $4,500; two will cost $7,500; and three, about $10,000. This is exclusive of shafting, pulleys, hangers, cans, and belts.

NATIONAL AGRICULTURAL CONGRESS.

The fifth annual session of the National Agricultural Congress was held in the judges' pavilion of the International Exhibition, at Philadelphia, commencing on Tuesday, September 12, and continuing Wednesday and Thursday. Two sessions were held daily on the Centennial grounds, and evening sessions at the Belmont Hotel. Mr. W. C. Flagg, the president, was in the chair, and Professor George E. Morrow, the secretary, was in his place. An address of welcome was made by the chief of the Centennial bureau of agriculture, Captain Burnet Landreth, followed by an address of the president on "American Agriculture." In the evening the secretary spoke of the work of the congress, its opportunities, and means of usefulness. Mr. Joseph Harris, the New York farmer who combines so successfully science with practice, followed with an address on the "Outlook of American Agriculture." Wednesday morning an address on "Agricultural Statistics" was delivered by the statistician of this Department, and one on "Agricultural Reform," by Dr. Thomas P. Janes, commissioner of the bureau of agriculture of Georgia. In the absence of Dr. E. L. Sturtevant, the secretary read extracts from his address on "American Agricultural Literature." In the afternoon addresses were made by Messrs. L. F. Allen and X. A. Willard, respectively, upon "American Live Stock," and "American Dairying." Col. Thomas Claiborne, of Tennessee, delivered an address, on Thursday morning, upon "Our Southern Agriculture;" and later, addresses upon industrial education were made by President Welch, of the Iowa College, and Professor Townshend, of the Ohio Agricultural College, which were followed by discussions of the practical aspects of agricultural education. The subjects presented during the meetings were more or less thoroughly discussed, and the usual variety of business was conducted, including the election of officers, Mr. Flagg being re-elected president, and Mr. Horace J. Smith, of Philadelphia, secretary, Professor

Morrow having declined further service in that capacity. Among the resolutions passed was one presented by Professor Riley, the entomologist, favoring the organization of a commission for investigation of the grasshopper plague.

At the request of the Commissioner of Agriculture, the address of Mr. Allen has been forwarded for publication. It is entitled

AMERICAN LIVE STOCK.

The subject on which your executive committee has invited me to address you, viz, "Our live stock interests, in their history, condition, and prospects," is far too broad in its scope to be compressed within the limits of an address on an occasion like the present. Indeed, it can only be treated in a manner suggestive, rather than practical, or even historical.

The history of the live stock of the United States, from the first settlement of our Atlantic seaboard to its present wonderful expansion to the shores of the Pacific, would be almost a history of the people themselves, so close has been the association of their domestic animals with the fortunes of the agricultural population. The limits of this paper will only allow me to touch on the introduction of our domestic animals, and follow them briefly for about two hundred and fifty years of progress into their present condition and prospects for the future.

It is a very broad subject—the entire category of our farm-stock—embracing the nobility of the horse; the utility of the ass, and the hybrid offspring of both, the mule; the branches of the bovine race: the cow for milk, the ox for labor, and the bullock for beef; the sheep for its flesh and wool; the swine for flesh, lard, and oil; not omitting poultry, and even the "little busy bee," which contributes to our household comforts and luxuries. You will therefore excuse the brevity of my remarks in each department, as any questions suggested may more fully be studied by reference to the many able works devoted to different branches of this interest.

First in order may be mentioned

THE HORSE.

His domestic history is coeval with that of mankind. He has contributed in no small degree to man's civilization. The most ancient of human annals, both sacred and profane, have eulogized him. His prowess has been extolled in histories of war; in domestic servitude his indispensable labors have been gratefully acknowledged; in luxury he is an indispensable agent, and altogether the noblest animal ever under human control.

The first introduction of the horse to the vast territory now comprising the United States of America was in all probability made by the Spaniards on the coast of Florida, some years previous to the settlement of the early English and other European colonists on our Atlantic shores. History gives us little or no account of the breeds and characters of those early importations. The Florida Spaniards came out chiefly as gold-hunters, and what horses they brought with them were in all probability of the Andalusian or ordinary Spanish race, which were for many centuries bred by the Moors in Spain, and subsequently by their Castilian conquerors. Those horses were small in size, good in draught and under the saddle, hardy in constitution, and capable of undergoing great fatigue with negligent treatment; in fact, the most useful class of animals for them and their successors. Without much, if any, improvement, they now plentifully inhabit Texas, California, New Mexico, and Mexico proper. They do not really belong to the class "American horse," as we now understand that classification.

The settlers on our Atlantic coast, beginning about the year 1616, brought out the horses of their own native countries; Holland, Great Britain, Ireland, Sweden, Denmark, France, and Germany being thus laid under contribution. Great variety of character was thus introduced, and as their importers were men of narrow means, the animals were probably not of the choicest kinds, either in blood or quality, but very useful in the rude agriculture of the time. As these horses shared the hardships and privations of their owners, no marked improvement could be effected until the introduction of superior animals by later immigrants.

As the colonies grew in population and strength, attracting increased attention from the English government, under which they were all ultimately combined, immigrants of wealth, official dignitaries, and army officers brought out many valuable horses, some few accounts of which date back to the year 1700. Among them were choice specimens of the draught variety, as well as saddle-horses; but the roadster, as we now know him, was then undeveloped, from the lack of good roads and light vehicles. Within a few years, however, after 1700, several fine blood horses of both sexes were

known to be imported into Virginia, New York, and other States both north and south, many of the earlier and later immigrants of those States being great admirers of horse quality. These later importations were closely interbred and widely distributed, and crossed on the common mares of the country. Thus a rapid improvement was made in the style and appearance of our horseflesh generally, as well as in their superior utility and value. So marked was that improvement that at the outbreak of the revolutionary war our military officers were usually equipped with horses of superior blood, quality, and action. Indeed, many of the brilliant achievements of our revolutionary army owed a share of their success to the thorough mounting of the cavalry, and the excellence of the horses ridden by the commanding and staff officers of the foot divisions and corps.

Recovering from the calamities and poverty of the war, as the circumstances of our people improved, the study and cultivation of their horses rapidly increased, and the earlier years of the present century produced many animals which, in high breeding, style, and execution of their work, equaled those of any other country, either on the race-course, under the saddle, in the harness, or the draught.

A brief notice of the various classes of horses now in approved use and cultivation among our American people may be germane to the subject; and first in order may be named the

English thoroughbred, or race-horse.—As originally introduced into the American colonies, and since continued in our States, he has been the foundation of the highest excellence yet developed for all ordinary use, aside from the heavy and slower draught. About two hundred years ago, during the reign of Charles II, the race-course first began to attract the attention of the nobility and other wealthy aristocracy of England, and it has been continued down to the present time. As a consequence, speed, bottom, hardiness, and endurance were the qualities chiefly sought in the development of the race-horse. For centuries previous they had fine horses in England, yet they needed improvement, if possible, and choice selections were made from Egypt, Arabia, and the Barbary states for stallions, and sometimes mares, to infuse their good qualities into the English blood. Many crosses of foreign stallions were made on the native English mares, and no doubt decided improvements were derived from their use, but, after all, the size and more muscular qualities retained by the descendants of those crosses were mainly of the original English character, and have been perpetuated both in England and America to the present day.

Late in the last century, and occasionally down to recent years, we have received importations of choice stallions from Asia and Africa, near the Mediterranean coast; but in justice I must remark that although some of them were of the highest symmetry in form, action, and appearance, yet when crossed upon our well-bred mares, a superior impress on their descendants, except in few instances, has not been eminently noticeable. Did time permit, I might go into particulars within the limits of my own observation, but the fact must remain with only a general remark of its truth. Whether the thoroughbred horse in the United States has been kept up to the standard of excellence at which he has arrived in England, or improved beyond him, an instance or two may determine. I have been unable to learn the best running-time of the race-horse in England, and therefore a current comparison between the speed of the American and English horse cannot be made.

In the great national four-mile race of three heats, on Long Island, N. Y., in the year 1823, between the stallions American Eclipse, bred on Long Island, N. Y., and Henry, bred in Virginia, the first heat was taken by Henry, by a head only, in 7 minutes 37½ seconds. The other two heats were taken by Eclipse in 7 minutes 49 seconds and 8 minutes 14 seconds, yet it was never exactly known what was the very best time Eclipse could make, only when matched with a nearly equal competitor, as he was called a lazy horse, and bore the whip freely.

The Kentucky-bred stallion, Lexington, on the New Orleans four-mile course, in the year 1854, won his race in 7 minutes 19¾ seconds.

Fellowcraft, also a Kentucky-bred stallion, won a race on the four-mile course at Saratoga, in the year 1874, in 7 minutes 19½ seconds. These are the two shortest races ever made, so far as records are given, thus leaving the American thoroughbred the peer of any others in the world.*

We may well suppose that the superiority of the thoroughbred horse in the combinations of speed, action, wind, bottom, and fineness of proportions has been fully determined, and that an infusion of his blood would be sought and worked into a large class of our miscellaneously-bred horses for other purposes than the race-course, or simply the gratifications of taste and pleasure. Among the most notable class of the thoroughbred crosses upon the better ones of miscellaneous character, is

The American Trotter, which we claim as solely an American production, within the last forty years, in the highest development of his speed. A detailed history of

* Since the above sentence was written, the horse Tenbroeck made a race at Louisville, Ky., in 7 minutes 15¾ seconds, beating Fellowcraft 3¾ seconds.—L. F. A.

the trotter would require many pages, for which no time can here be allotted, and the horse literature of the country only can give it. Suffice it to say, however, that his descent has been largely drawn from the thoroughbred for many years back in his ancestry.

Trotting horses of celebrity have been recorded in the English periodicals of years ago, particularly Bellfounder, who trotted 19½ miles in an hour; but in the trotting horse, classed by himself, England, as compared with America, has yet made no distinguished record; and that the American trotter has been most skillfuly bred and trained to his recent astonishing achievements is a testimonial to our native enterprise beyond that of any other country. Thirty years ago, a horse that could trot a mile in three minutes was considered a remarkable animal. That three minutes has been gradually reduced from year to year, until, in 1875, the mare Goldsmith Maid, at eighteen years of age, made her mile in 2 minutes and 14 seconds, and repeated it in the present year, 1876, in the same time. We now have scores of horses which make their mile in less than 2½ minutes on the trotting-courses of the country, as well as hundreds of them who easily do their mile in 3 minutes speed. Thus the American trotter stands at the head of his class over all others in the civilized world, as yet discovered.

If it be inquired in what remarkable manner the rapid speed and high qualities of the trotter have benefited the ordinary horse stock of the country, the answer is readily given in the fact that our better class of driving horses has been wonderfully improved in action, as well as in quicker movement, sureness of step, higher pleasure to all who either drive or ride after them, and in the increased marketable price they obtain for their breeders.

Next in order we may remark, in the absence of a more appropriate name, upon

THE HORSE OF ALL WORK, equally adapted to family use, the labors of the farm, or other purposes. I doubt if any part of the world, climate and soil considered, can show a better class of horses than those bred in the United States and the neighboring province of Canada. Made up of no particular breed, but an infusion of different bloods, they answer an admirable purpose for almost all uses, so far as size, endurance, muscular action, and longevity are concerned. A composite breed they may be called, if such a miscellaneous admixture can be called a breed at all. They are of all colors and all sizes, from fourteen and a half to sixteen and a half hands high, and weigh nine to twelve or thirteen hundred pounds in fair condition of flesh. They are bred and reared by all good farmers who make horse-rearing a branch of their industry, and are bought and distributed all over the country, in village, town, and city, where, aside from mere fancy use, the horse is needed. Good stallions are kept for service in almost every neighborhood of the land, and of these the horse-breeder takes his choice for service to his mares, and succeeds in their production as his skill and care may determine. There is another example of the value of our horse of all work in Great Britain, which can boast as good horses, of their kind, as any part of Europe. Since the street rail-car has been introduced into Great Britain, within the past year or two, it has been found that they had no class of horses especially fitted for that work. It required the sinewy, elastic movement, coupled with the medium size and endurance in our all-work horse. As a consequence, many hundreds of American horses have been purchased in our northern States and Canada for export to Britain, for other purposes as well as for street railways, and the trade is still continued to the mutual advantage of both countries.

Another class demanded for exclusive purposes is

THE DRAUGHT-HORSE, PROPER, needed for heavy farm labors, and drawing the weighty loads in our commercial and manufacturing cities and towns, for which the ordinary horse of our farmers is incompetent. Of this class, if we have any which may be called "ancient" among us—say a hundred years or more—first in order stands the *Conestoga*, of Pennsylvania. The name is a local one, taken from a river of the central part of that State. He is supposed to be a native of Flanders, and to have been introduced by the German immigrants soon after they settled in Pennsylvania some time in the last century. This horse is still reared in Pennsylvania, but in smaller numbers than formerly, and in several other States, and is a decided favorite with those who breed and use them. Nearly or quite a hundred years ago, when the settlements of that State had extended westward over the Alleghany Mountains, when towns began to spring up, and heavy transportation between them and the seaboard became necessary, the huge canvas-covered wagons, carrying six tons and upwards of merchandise, were drawn by spans of four to eight horses, with sometimes a ninth one in single harness as a leader. Those horses ranged from sixteen and a half to seventeen and a half hands high, with bodies solid and bulky in proportion. Long before canals and railroads were known in our country, caravans of those teams were daily seen at all seasons of the year traversing the roads over the mountains between Philadelphia and Pittsburgh, and with bear-skin housings upon the hames, and an arch of bells above them, with the driver seated on the near wheel-horse; a more picturesque spectacle of the kind could rarely be imagined. Their usual rate of travel was about twelve to fourteen miles a day. But those caravans, since the construction of rail-

ways, have mostly passed away, and the descendants of the stately teams are now devoted chiefly to agricultural uses, and the drays and wagons in the cities. It is doubtful if a better class of heavy draught-horses than they have ever existed. It is claimed by some writers that the Conestoga has been bred to his high degree of excellence by crosses of the thoroughbred English horse, but without sufficient evidence of the fact, as for the last seventy years he has developed no trait of the blood-horse in his composition, and in his characteristics has adhered solely to the type of his original progenitors.

Other foreign breeds of the draught-horse of decided excellence have in later years been introduced among us, and are much approved. Among these may be named, in the order of introduction, the *Clydesdale*. This horse is of Scottish descent, of the largest size, seventeen to eighteen hands high, with a ponderous body, stout limbs, hairy at the fetlocks, of high and noble carriage, and unsurpassed in weight and strength. They occasionally reach a weight of seventeen, even eighteen hundred pounds. They were first introduced by the Scottish farmers into Upper Canada, where they have been bred in considerable numbers and are still annually imported. There have been also some direct importations from Scotland to the United States. Many of the Canadian importations have found their way into several of our States, where, for heavy agricultural and other draught, they serve a valuable purpose.

The *Suffolk Punch*, so called, is a draught-horse of English breeding and descent. He is of large size, but smaller in bulk and stature than the Clydesdale, somewhat similar in style of body and limb, but without the hairy fetlock. A few of them have been imported into Canada and the United States, but have not yet acquired the popularity of the Clydes, although of decided excellence and a model of their kind.

There are two other classes of draught-horse introduced into our country, somewhat similar in character and probable descent, and may be classed in nearly a parallel category.

The *Normans* may first be named as earliest in importation. They are natives of France, not of like style altogether with the draught-horses already named, as they embody more speed in action, with great strength of limb and power of locomotion. They are largely worked in the heavy diligence traveling-carriages of France, which they move at five to eight miles an hour on the roads, holding a good trotting gait. They are also used for drawing heavy loads in the cities and towns and in agricultural labor. Their usual size is sixteen to seventeen hands in height, compact in body, symmetrical in shape, clean in limb, hardy in exercise, and enduring in labor. The stallions have been of decided service in crossing with our mares of "all work," as well as in breeding with mares of their own kind; for the mixed uses to which they may be applied are a valuable addition to the horse-stock of the country.

Next to and partially associated with the Normans, may be named the *Percherons*. As a rule, they are somewhat larger in size. They are also natives of France, and applicable to the same uses as the Normans, and of equally good shape, style, and appearance. They have been considerably imported into several of our States, of late years, and received with approbation among those who need a beast of their kind. They may be pronounced a decided acquisition, and it is to be hoped that the enterprise of their importers may be liberally rewarded. From the numbers of both sexes now here, a healthful production of their kind, both in general excellence and purity of blood, may be anticipated.

Nor in our horse category should the lesser, and even diminutive *Pony* be overlooked. For a century or more past they have been imported into the United States, of different character and style, from the Welsh and English pony of twelve to thirteen hands, down to the diminutive little Shetland from the northern isles of Scotland, of three feet or less in stature. They are usually symmetrical in shape and appearance, of wonderful strength, docility, hardiness, and endurance. Although of little use as laboring beasts, they minister largely to the pleasure of our families, are the delights of our children, and worthy of attention and propagation as innocent promoters of luxury and enjoyment. Under proper care and attention they thrive as well in America as in the countries from which they came to us.

THE ASS.

This useful and indispensable animal—useful in mule-breeding as well as in the propagation of his own species—is among the most important items of our farm-stock, and worthy of a discriminating notice. On the eastern continent their utility is of as ancient date as that of the horse, and among many nations and peoples their labor is indispensable. They were early brought into our American colonies, and from their first introduction until some years of the present century were widely used in the Atlantic, Northern, and Middle States for the propagation of mules for the West Indies and our southern domestic markets. Since about the year 1820, mule breeding and rearing in the Eastern States being superseded by the cheaper facilities for producing them in several of the more western States, the ass has ceased to be either an article of breeding or commerce where they were first imported, and is now rarely known

within their boundaries. Yet in the localities where now most used, he has been improved both in size and quality. Numerous importations have been made during the last seventy years, from Spain, Malta, and other adjacent countries, of the best blood of his race, and their produce, bred on the females of American stock, have so improved them that we can now exhibit the domestic ass as equal, if not superior, to those of any other country. Would time permit, we might even go into particulars, to prove our assertion, but it must now suffice to state the fact in general terms. With us he is rarely used as a laboring beast, his services being superseded by the mule, as our country is happily free from that low class of labor in which his drudgery is needed.

THE MULE.

The origin and history of this peculiar animal is almost as ancient as that of his progenitors, the ass and the horse. He has ever been useful in the industries of the people of many nations, both ancient and modern, and to the development of certain branches of our American agriculture, traffic, and commerce he is widely appropriated and indispensable. The early mules of the Eastern States were small in size, seldom attaining a height of more than fifteen hands, and usually less, yet of great strength in labor, endurance, and longevity; but the western mule has far exceeded him in size, weight, and adaptation to the heavier work demanded of him. It is now not uncommon to find him sixteen, even seventeen hands high, with a body in proportion, and frequently a comeliness in form exciting the admiration of those who are partial to his employment. His uses in the various labors demanded of him are so well known that it is unnecessary to name them; and in comparing him with the mules of other countries, it may be truthfully said that the American mule has no superior, and but few equals, and thus constitutes an important staple of our agricultural wealth. A proper history of the progress and present condition of either the American ass or mule has never yet been written for publication other than in detached scraps or pamphlets, yet they are subjects well worthy the employment of an able pen, and it is hoped that such a labor will be undertaken by some one fully competent to its execution.

AMERICAN CATTLE.

To give a history of the rise, progress, and present condition of this important department of our industry would be to write an elaborate book, the like of which was written some four years ago; but it has fallen, I fear, too seldom under the notice of those whose interests would be promoted by its perusal, even under its shortcomings and imperfections. However that may be, I shall briefly, yet as accurately as my observation may allow, give some notes and suggestions on their very wide importance. Neat-cattle, in the sense usually understood with us, or, more strictly, animals of the bovine race, were introduced into all our Atlantic States soon after the first settlers came over from Europe. Those settlers brought with them animals reared in the vicinities from which they themselves came, of various nationalities. Their cattle were of no particular breeds or distinctive names, that we have learned, but such as served the wants of the settlers in the production of milk, the propagation of their kind, their meat for food, and their labor for agriculture—animals of a common order only, as improved breeds in those days had not received much attention in the countries from which the immigrants came. Anterior, however, to the colonial settlements in what are now the United States, the Spaniards had introduced many cattle from their own country into the territories of Mexico and further south, and in the broad, luxuriant pastures of those regions they multiplied into numerous herds, with little attention to their improvement, as they are now found and known; but of late years, since the annexation of Texas, New Mexico, and California, they have become quite an article of commerce and consumption in other States.

In nearly all the grass-producing or grazing portions of our older States, as the people progressed in their modes of agriculture, their cattle, increased and multiplied, were usually well cared for, and answered all the purposes demanded of them. In some sections of the country they were better cared for than in others, and possibly improved in quality over the originals from which they sprung; yet as the settlers, after some years, began to migrate to different localities, taking portions of their herds with them, the cattle became intermixed with those derived from other nationalities, so that in process of time a general intermixture took place, and the name "common cattle" was only known in their application. This name is now continued to distinguish them from the improved breeds of later years.

Occasionally, and at different times in the last century, tradition has informed us that enterprising men of wealth had imported some choice cattle of "improved" blood from Europe—the names of the breeds not remembered—but they were so few, and so little attention was paid to their propagation in their own distinct lines, that they soon became amalgamated with the common stocks. Yet that the infusion of their blood

among the others to some extent made their progeny better than the older herds we have good reason to believe, particularly as the working oxen of the Eastern States, and their superior dairy cows, for some generations past, have been held in high estimation. This assertion may, however, be qualified by saying that the oxen were chiefly used in labor on the farms, and the dairy formed a considerable staple of their agriculture, consequently drawing closer attention to the cultivation of their cattle. In the more fertile soils of the Middle States, which were chiefly grain-growing, horses were used for labor and cows in the dairy mainly for domestic consumption, while the steers and bullocks grown by them were for meat purposes, or, if for labor at all, only for a few years, until the forests were subdued and the land made clear for horse cultivation.

BREEDS OF CATTLE.

Of improved cattle we now have several valuable and distinct varieties. A few remarks on each of them must suffice; and first in order, as they are by far the most numerous in attracting the attention of our farmers, breeders, and graziers, I name the

SHORT-HORNS.—Soon after the revolutionary war, and previous to the year 1800, a few animals of this breed were imported by two different Englishmen into the city of New York. The fact of their importation is the chief thing known about them, as only a few results are now recognized from their breeding. One of the imported cows was taken back to England—"the American Cow," so called, of the English Herd-Book—from which, afterward, many noted and valuable animals descended. About the same years, also, two different importations of cattle, supposed to be Short-horns, were made from England into Baltimore and taken to the valley of the south branch of the Potomac River, in Virginia, and from there, within a few years afterward, some of their descendants were driven to the blue-grass region of Kentucky, where they were carefully propagated, and in after years, crossed by bulls of still later importations, became an important item of the cattle-wealth of that State.

We hear of no further Short-horn importations until after the war with England, in 1812-'15. Soon afterward, several importations of them were made into New York, Massachusetts, Kentucky, Maryland, and Pennsylvania. They were industriously bred by their enterprising owners, and the valuable qualities of their own distinct blood, and the improvement through their crosses upon the common cows of the country for most useful purposes, soon gave them a popularity and dissemination attained by no other breed, and since followed by numerous importations into many of our States and the Canadas. They now stand largely in excess of numbers over all other foreign breeds put together. The various merits of this breed it is not now necessary to discuss, as different opinions may be entertained regarding them, but the fact may be stated that their recorded pedigrees in the Herd-Book now number more than 60,000 well-bred animals, and at the present time they are increasing more rapidly than at any previous period in their history.

DEVONS.—This is a strikingly distinct breed in form and quality, medium in size, uniformly red in color, comely in appearance, and of decided excellence: the ox for labor, as his agile form indicates; the cow for milk, when cultivated for that object, and the uniform excellence of their flesh when properly fed and matured. Nor can there be any doubt of the original distinctive blood of the Devon. Their advocates in England claim them to be as ancient in blood and descent as the Roman rule in that island, many hundred years ago; but by what evidence, other than in their peculiar style of form and character, is not known. That animals allied to them in blood were brought to America from England so long ago as in the seventeenth century is altogether probable, as many of the native New England cattle, for many generations back, have borne strong resemblances to the Devon in some of their characteristics.

The first authentic knowledge we have of thoroughbred Devons being imported to our country was in the year 1817, by Messrs. Caton and Patterson, of Baltimore, Md., and in the next year by the late distinguished statesman, Rufus King, of Long Island, N. Y. By those gentlemen they were bred and cultivated, and herds from them considerably disseminated in different sections of the country. Later importations of them have been made into Maryland, Massachusetts, New York, and some other States. There are now several fine herds of them existing in different sections of the country, but, we regret to say, not in the numbers which their good qualities should command, but of excellence quite equal to the original importations. It is hoped that they will still further increase, until they become numerous among the standard breeds of our country.

HEREFORDS.—Next in order of improved cattle this breed may be named. The first distinct account we have of thoroughbred ones of the kind were an importation by the great Kentucky statesmen, Henry Clay, in the year 1816. An ardent admirer of fine stock, he saw them in England in 1815, and purchased two pairs of bulls and cows, which afterward came out and were placed on his farm at Ashland, near Lexington.

Whether any or what number of thoroughbred produce came from them, we are not informed, as no record was kept, and they are not now known in Kentucky. The bulls were bred to some of the native cows in their vicinity, but the Short-horns, which were imported there soon afterward, superseded them in propagation, and we hear nothing further of their produce.

About the year 1824, one or more Hereford bulls, and perhaps a cow or two, were imported into Massachusetts. We here of no thoroughbred produce from them, but the bulls were bred to a limited extent on common cows, and no marked result followed, except some grand working oxen, afterward fed into excellent carcasses of beef. In later years, a few importations of choice animals were made into New York, Ohio, and Upper Canada. Their descendants have been scattered in small herds into several States, but, we regret to say, not with the popularity which such excellent grazing and beef-producing animals merit. As flesh-producers they strongly rival the Short-horns, and in size nearly equal them. They are mainly red in color, with white or mottled faces, and occasionally white legs and bellies, and stripes along the back. In England they are claimed as an ancient breed, and their distinctive uniform appearance well bears out the assertion.

The three English breeds already named may be classed as the best flesh-producers.

Next in order may be named the breeds more distinctly used for dairy purposes: the

AYRSHIRE.—This is claimed as a dairy or milking breed, and wherever known, either at there native homes in Scotland or in their later ones in the United States, are esteemed and cultivated for that exclusive purpose. They are said, by authentic history, to have been originated about a century ago in the district of Ayrshire, whence the name was taken, by a cross of Short-horn bulls from the north of England on the common or native Kyloe cow of Scotland, and cultivated into their present excellent dairy qualities by careful and persistent breeding, until their characteristics have become fixed and enduring. They were first imported in small numbers to America between the years 1820 and 1830, as nearly as can be ascertained, and within the last thirty years in such numbers as now to be found in many considerable herds. They are highly esteemed by those who are partial to them for their large yields of milk, which render them much more profitable for dairy uses than the common cows of the country. In size they are about equal to our common cattle; in color, usually red or brown, more or less mixed with white; in shape, more like the Short-horn than any others, although lacking their fine contour and comeliness of appearance—a valuable breed of cattle.

HOLSTEINS, OR NORTH HOLLANDS.—This breed, in its present characteristic of great milk-producing quality, has been introduced here within the last twelve or fifteen years, from Holland, and first, we believe, imported by the late Mr. Chenery, of Boston, Massachusetts. They are of large size, nearly equal in weight and bulk to the Short-horn, and have some of their strong points of character, but coarser, less refined in figure, and black and white in color. For the few years in which they have been on trial here, their dairy development has been remarkable in the *quantity* of their milk. As a flesh-producing beast they are claimed to be good, but the economical result in their consumption of food to weight of flesh has not been thoroughly solved. They are unquestionably good cattle, far superior to our native cows; and when sufficient time has passed to develop their full qualities, they may stand in the first class of dairy cows. They are evidently of an ancient stock, originating possibly in Holstein or North Holland, and may in some branches of their ancestry have had an affinity with the far-back, unimproved Short-horns, although in color and general appearance now much unlike our Short-horns of the present day.

Last, but not least in importance, may be named the

ALDERNEY, JERSEY, AND GUERNSEY, from the Channel Islands of Britain, near the coast of France. These breeds or varieties are named together, as they are unquestionably of common origin, and owe their present distinctive qualities in appearance to their manner of breeding, and the tastes and preferences of their long-time propagators. That they are an ancient breed there can be no doubt, probably French in origin, as the cows of the provinces of Normandy and Brittany bear a considerable resemblance to them; but isolated as they have been from the mainland of the continent during the centuries of their cultivation on the islands, they have assumed the characteristics which so readily distinguish them. In size they are smaller than our native cows, delicate in form, unique in shape, diversified in color, and bloodlike in appearance. The prime quality claimed for the cow is the exceeding yellow color and rich quality of her milk, cream, and butter, in all which she stands without a rival, although her quantity of milk is moderate, compared with the weight of butter which it yields. For the production of meat, the Channel Island cow, or even bullock, (whenever suffered to become a bullock,) is inferior, the anatomy being angular, and not capable of making much flesh in the choicest parts of the carcass. Within the last thirty years they have been numerously imported into our States, and are much sought in the vicinities of our large cities, towns, and villages as family cows. They are easily kept in small paddocks or close stables, where their rather delicate natures can receive the attention, kind treatment, and choice food usually bestowed upon them.

For all these improved breeds herd-books containing their genealogy, by way of pedigree, are kept in the United States, as well as in their native countries, and from them a full knowledge of their descent and blood is readily obtained by all who choose to inquire into their breeding. Prices might be quoted of the sale values of several of these breeds of cattle—some of them seemingly extravagant in amount—but such statistical reference is not demanded in this limited discourse, rather leaving it to the tastes, judgments, and fancies of those interested in their breeding. The introduction of these improved breeds has added enormously to the value of the neat-stock of our country, and their further dissemination is yet to add untold millions to its productive agriculture. Slow as farmers, cattle-breeders, graziers, and dairymen have proverbially been in the improvement of their herds, a rapid and more intelligent interest is every year manifested in their increase.

In addition to the breeds of cattle already named may be a few others of foreign origin introduced at different times by way of experiment or personal gratification; but as they have taken no strong hold on the attention of our stock-breeders, a further notice of them may be omitted, while in the grand specimens of the various breeds which have been mentioned we may assert, without contradiction, that no country in the universe contains better herds than the United States of America can now exhibit.

The subject of our neat-cattle can hardly be dismissed without an allusion to an important item of their increasing value in *fresh-beef exportation*, which has recently been developed by the demand for fresh carcass meat from abroad, particularly in Great Britain. Refrigerators have been fitted up in Atlantic steamships, and, by the aid of ice, many tons of beef, in quarters of the carcass, have already been, and unlimited tons more may continue to be, transported to Europe with entire safety, and in perfect freshness. The prices for which it has been sold in the London and Liverpool markets have proved equal to those for the best qualities of their native beef, and profitable to the shippers. There is, however, a condition attached to our successful exports, which is, that the meat be of the best quality, and that quality can only be obtained from animals of improved breeds which have been partially described. We have only to proceed in the cultivation of those breeds, in order to add a wide, almost illimitable, field of production to the neat-stock interests of our country.

SHEEP.

These were early introduced into our American colonies as companions of the horses and cattle brought by the settlers. They were of the kinds then common to England, Scotland, Ireland, and perhaps the western coast of the European continent, of various breeds, as they then locally prevailed, but without much merit, other than a tolerable carcass of ordinary flesh and a moderate fleece of coarse wool. They were so kept and propagated, with possibly an occasional importation of a better kind from England, but it was not until late in the last century that Bakewell, Ellman, and other enterprising breeders made their experiments in different breeds which resulted in any considerable improvement in their condition and appearance. Thus the American sheep were chiefly of an inferior character.

MERINO.—In the early years of the present century the American embassadors at the courts of France, Spain, and Portugal, during the intense commotions of the Bonapartean wars, purchased and shipped to the United States many hundreds of Spanish Merino sheep. They were of the fine-wooled varieties, named as you will find in our books on sheep-husbandry. Their introduction here was hailed with great satisfaction, and as our infant woolen manufactories were then just emerging into existence, great importance was given to their propagation, not only in their own purity of blood, but as valuable crosses on our common flocks in increasing and refining the qualities of their wool. From those days forward to the present time the cultivation of the better qualities of wool has been the study of numerous flock-masters in various parts of the United States, suitable to their rearing, and the sheep interest now presents an important branch of our agricultural production and wealth. The Spanish Merino has evidently been much improved in its American cultivation, not only through the crosses of more recent importation by several of our enterprising Americans from the royal flocks of France, Saxony, and Silesia, upon the earlier Merino ewes, but by our own flock-masters at home, so that at this day no fine-wool sheep in the world excel, and few equal, the *American Merinos* in the heavy products of their fleeces, or the size and stamina of their bodies. We might examine the statistics of their annual production aggregating millions of dollars in value did time and opportunity permit, but we may rest content with the general facts which have been stated and the progress we have made in their cultivation, not only in the fine wool but in the other varieties.

THE COARSER-WOOLED MUTTON-SHEEP, so successfully bred in England during the last seventy years, we have for the past thirty years adopted by frequent importations. They have been successfully propagated in their own purity of blood, and by their crosses on the common flocks raised our inferior ones to a value hitherto unknown

in their kind. We have now the Bakewell, or Leicester, the Cotswold, and Lincoln, all of the most valuable long-wool varieties. We have also the Southdown, the Shropshire and Oxford Downs of the middle wools, abundant in fleece, massive in the quantity and delicious in the excellence of their flesh, so that Americans may, within the next decade or two, become, as they have never yet become, a partially mutton-consuming people, and ship thousands of dressed carcasses to Britain, as is now done with our fresh beef.

SWINE.

In the category of other domestic animals brought into our country with the early immigrants came also this animal indispensable for domestic consumption, constituting an important item in our exports abroad. From the earliest history, swine have been connected with farm-husbandry, as well as untamed rangers of the forest, in which latter condition they even now exist in some of the uncultivated sections of the eastern continent. To what degree of perfection, or even improvement, they were cultivated in ancient times, history gives us little or no account; but we do know that for many years previous to the present century, and for some years since, the common swine of the United States were inferior in the quality of their flesh, ungainly in form, slow in arriving at maturity, and repulsive in almost every phase of their character as companions to our other agricultural stock. Yet in Eastern Asia, and in portions of Europe, perhaps for a century or more past, considerable advances had been made in the improvement of their domestic swine, as a few years after the revolutionary war, importations of improved animals of the kind were introduced into our country, and among them we have accounts that General Washington had some of them which were sent over as a present to him at Mount Vernon, from England. Early in the present century, also, the East India merchants of Massachusetts and New York imported some fine specimens from China and India, which were afterward considerably crossed on the common stocks of our Eastern States, and much improved them both in the qualities of their flesh and domestic habits. Still, until within the last fifty, or even forty years, the mass of our farmers throughout the country, and more particularly in the Western States, bred and reared swine of ordinary character, answering, to be sure, the main requirements of consumable flesh, but inferior in its high condition to that now found in our markets, either for domestic consumption or exportation.

The various foreign breeds to which we are indebted for our present swine improvement are too numerous to mention, and their history in detail, although quite interesting, is too long to narrate, but the agricultural literature of our several States will fully inform all inquirers of their various progress and present status. As an evidence of the present interest in their production and improvement, an association of swine-breeders has recently been formed, whose headquarters are at Springfield, Ill. They have issued a swine herd-book for the Berkshire breed, after the style of the various cattle herd-books, in which their genealogy and high excellences are chronicled. Not that we would exalt this particular breed above others, perhaps equally meritorious, but to signalize the enterprise of our farmers, and the magnitude of the pork and lard-producing interest of our country, amounting to hundreds of millions of dollars annually. The swine of the United States now consume a great share of the product of the almost illimitable corn fields of our Western and upper Southern States, thus converting a great portion of that valuable grain into a portable commodity, which, without them, would be either a drug, or an almost inconvertible staple of their agriculture. We may, in view of the progress we have made in swine cultivation and improvement, place the United States superior to that of any other country in the world.

POULTRY.

To descend to a smaller, yet quite indispensable, item of food consumption in our households, as well as ornamental accompaniments of domestic life, the varieties of our poultry may well and profitably be mentioned. They, too, (the turkey excepted,) came over with the early settlers of our American colonies, and have been the intimate associates of our people ever since. They constitute an important part of the luxury of our tables, both in their flesh and eggs, the aggregate commercial value of which, were it accurately reckoned, amounts to millions of dollars annually. The poultry literature of our country is voluminous, both in books and various agricultural periodicals, to which those in search of information may readily refer. As a general remark, it may suffice to say that importations from foreign countries, of various breeds of them, have been frequent and of rare quality, both in the estimation of the economist who propagates them for profit, as well as the amateur, for the gratification of his taste in their selection and exhibition. Poultry societies have become numerous throughout the land, and the annual exhibitions of their various specimens have been marvelous in excellence, beauty,

and variety. The cultivation of the finer varieties has arrested the attention of men and women of taste, wealth, and refinement to such extent that the perfection of our poultry may even be classed among the fine arts of animated nature, and challenge competition with any portion of the universe.

Least and last of the domestic creatures which engage our attention may be named a small insect,

THE HONEY-BEE.

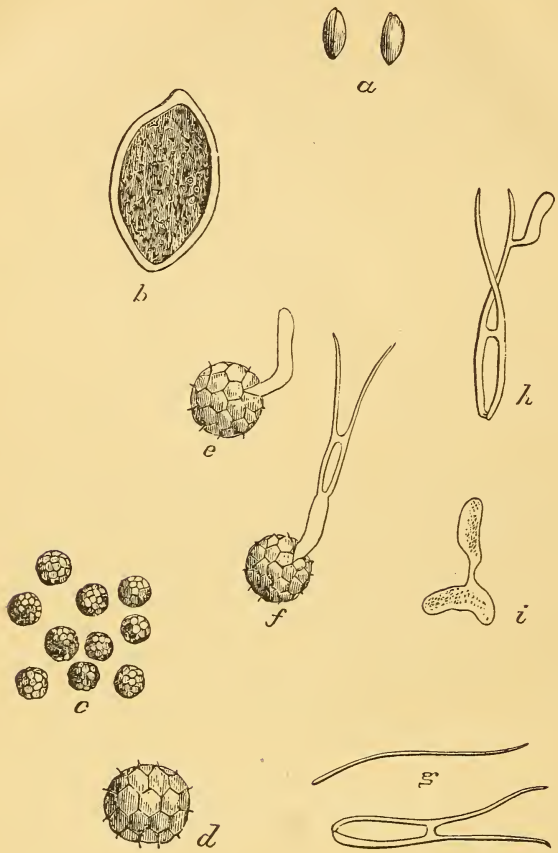
Time, long before and ever since the bee made its honey in the carcass of the dead lion slain by Sampson, has noted this useful insect in its companionship with man, as well as in its wild habitations in the wilderness, where climate and vegetation favored its propagation. It furnishes us the most luxuriant of sweets in its honey, and an important commodity in its wax. The aggregate annual commercial value of our bee-product is probably hundreds of thousands of dollars, being difficult to determine, from the want of current statistics; yet all who choose to investigate may be assured of their importance. Of bee literature, we have public journals devoted to their interest, many volumes of printed books, and divers essays in our agricultural periodicals; and were I to relate the annals of my own personal companionship with them for many years past, I should only tell you that at the present day they are both as untamed and uncivilized as when the great patriarch, Noah, let them out of his ark to forage among the renewed plants and flowers at the foot of Mount Ararat. They live, propagate, and subsist by *instinct* alone, and not all the invention or ingenuity of man has been able to improve their qualities, to change their habits, or invite them to a companionable docility. Even the importation of the superior Italian bee into our country in late years, and crossing them on our common stock, has not perceptibly improved their habits. So, lovable as they may be in their sweets and wax, they are barbarians now, as ever, and equally at home in the hollow trunk of a tree in the wildest forest, as in their hives amid the flowers of the field, or the refinements of the mosy highly cultivated orchard and garden.

Now, gentlemen, in all this long dissertation I have probably told you nothing new, and little which will prove instructive, or even worthy of publication. Yet we have seen that from the rudest material at the beginning of our agricultural settlements we have made decided progress in the breeding and cultivation of our domestic animals, and that chiefly within the last century. We find that much has thus far been accomplished, and with the aids and lights now at our disposal, we trust a still more rapid and a more widely disseminated progress can be achieved in the future.

The present value of all our varieties of domestic live stock in the United States and its territories may be safely estimated at two thousand millions of dollars, and their annual product of all kinds at one thousand millions more. Full 30 per cent. has been added to the aggregate *per capita* value of our *graded* stock by improvements in their breeding within the last fifty years, and at no increased cost in their keeping, although those improved animals as yet extend over only a fractional part of our country. What then may be the increased measure of value when—if such a thing be possible—that improvement shall embrace the farm-stock of our entire broad nationality? It must be almost incalculable.

In review of this live-stock history and progress which has been considered, I wish here to note, and with somewhat of emphasis, that, with the exception of our finer classes of horses, the breeding, rearing, and cultivation of our farm-stock has been hitherto considered, by those not intimately acquainted with it, as an occupation of a rather vulgar order, and conducted by men of duller intellects than those engaged in professional, scientific, commercial, or manufacturing pursuits. Such a supposition is a profound and ignorant mistake, based only on an entire misapprehension of the study of animal physiology. The cultivation of domestic animals, and their improvement, through generations of their kind, into the admirable specimens which we now see, is as much a branch of the fine arts, applied to animal physiology, as are the superb specimens of statuary and painting which you to-day witness in these Centennial rooms, produced by the successors of Phidias, Michael Angelo, Raphael, or Claude Lorraine.

Among the improvers of domestic live stock within the last two centuries, both in Europe and America, will be found men of the highest intellect, learning, refinement, position, and wealth, whose studies have been drawn to the development and exaltation of the qualities of their animals. I need not recount the names of distinguished Europeans, past and present, who have lent their influence and labors to that pursuit; nor to Americans, from George Washington, of Virginia, Chancellor Livingston, of New York, Henry Clay, the great Kentucky statesman, and a large number of eminent men of all professions and pursuits, aside from enterprising farmers proper, whose main business has been that of breeding and rearing improved classes of stock—names, both dead and living, all too numerous to mention. Nor has the attention of those breed-

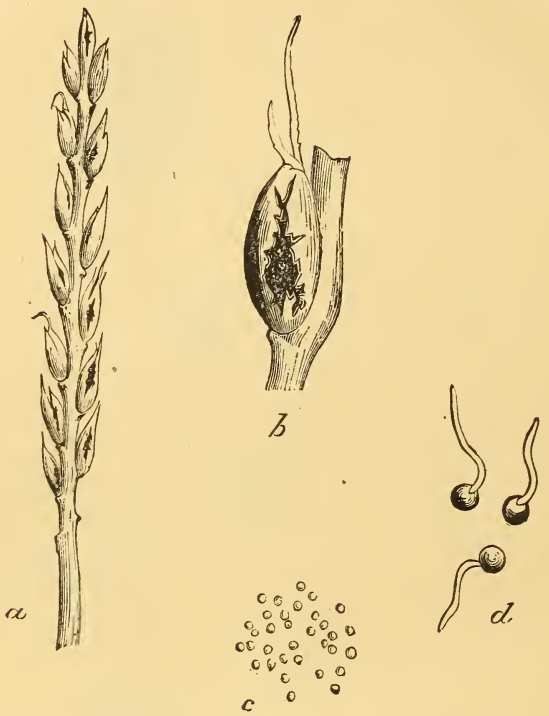


TILLETIA caries Tul.

a.—Infected grain, nat. size. *b.*—Section of grain enlarged. *c.*—Spores x 500. *d.*—Spore x 1000. *e.*—Germinating Spore. *f.*—Secondary Conjugating Spores. *g.*—Secondary Spores. *h.*—Secondary producing Tertiary Spores. *i.*—Tertiary Spores again germinating.

In kernels of Wheat.

CONIOMYCETES—USTILAGINEI.



USTILAGO Segetum hh.

a.—Nat. size. *b.*—Infected grain enlarged. *c.*—Spores x 500.
d.—Spores germinating further magnified.

On Cereals and Grasses.

ers and improvers been limited to the most valuable classes of stock, but equally so to those of minor commercial value. Women, too, of equal rank and position in society with men, both in Europe and America, may be classed in the noble array of fine-stock improvers—all in their labors benefactors of mankind.

God has appointed our lot in a country of diversified climates, and blessed it with a wondrous fertility of soils. If a due improvement of our advantages be hereafter neglected, on those guilty of that neglect will rest the penalty; and yet, when another Centennial of American Independence shall arrive, we trust that those who then succeed us may rejoice, as we, their progenitors, now do at the present, in a still higher advancement to crown their labors with thanksgiving and gratitude to the benignant Father of Mercies for the successes they shall have achieved and enjoyed.

MICROSCOPIC OBSERVATIONS.

By Thomas Taylor, Microscopist.

Coniomycetes Ustilaginei.—*Ustilaginei* is the name given to a family of Coniomycetes fungi related to the *Uredinei*, generally distinguished by their growing in the interior of the organ, (especially the ovaries and anthers,) of flowering plants, causing deformity, absorption of the internal tissue, and its replacement by a pulverulent substance consisting of the spores of the fungi. In the earlier stages, the infected organ exhibits either a grumous mass, or an interwoven filamentous mycelium, from which acrogenous spores arise; finally, the mycelium disappears, and a dark-colored (often fetid) powder remains, composed entirely of the spores, which are simple.

Ustilago segetum—A genus of *Ustilaginei* frequently found on cereals and grasses, forming the blight called *smut* of corn, commonly infesting wheat, oats, barley, and other grasses, filling the ears with a black powder of smooth spores about 1.5000″ in diameter, in corn sometimes about twice as large in the varieties attacking species of Bromus. The smut of maize, *U. maidis*, has minutely echinate spores 1.2500″ in diameter. Sedges are infested by *U. olivacea* with olive-colored spores. *U. antherarum*, growing in the anthers of *Caryophyllaceæ*, has violet-colored spores. Many other species are described by Tulasne.* The cuts representing *Ustilago segetum* and *Tilletia caries* are from original drawings by M. C. Cook, and form part of my series of water-color sketches and drawings representing microscopic fungi at the Centennial Exhibition. It is proposed to publish the entire series in the reports of the Department.

FACTS FROM VARIOUS SOURCES.

Best time to sow oats in the South.—Mr. D. J. Sanders, secretary of the agricultural and mechanical association in Jackson County, Georgia, expresses the opinion that in that section 90 per cent. of the crops of oats sown in the spring, or in the autumn after Christmas, either rust or fall down before ripening, and that unseasonable sowing is the main cause of failure in the oat-crop at the South. He adds: "They should be sown in August and September, or the first week in October, in order to insure a crop."

Prosperous agriculture.—The secretary of the agricultural association in Jackson County, Georgia, reports that in that county the oat-crop is better than last year by 50 per cent., corn by 100 per cent., and sorghum by 200 per cent. The sorghum-crop also surpasses that of last year in quality. Under date of September 22 he reports that tables in

* See micrographic dictionary.

the community were being supplied with delicious beans of a second crop from seed sent out by the Department last spring.

VALUE OF AUTHENTIC INFORMATION.—Our correspondent in Williamson, Texas, sent to the Department for examination a specimen of bat-excrement found in a cave near Georgetown, in that county. The results of a chemical analysis were published in our monthly report for June. As one consequence, the cave, which was bought one year ago for $200, has recently been sold for $1,500.

SHEEP-FARMING IN OREGON.—Mr. S. G. Reed, of Portland, Oregon, at the request of the Commissioner, has furnished some very interesting facts in regard to sheep-husbandry in that State. He has raised a flock of pure-blood Cotswolds and Leicesters, the former imported from England in 1871, and the latter from New Zealand. He has found the climatic and other conditions in Oregon very favorable to sheep-raising. The aggregate weight of five average Cotswold ewes, March 30, 1876, amounted to 1,091 pounds, or 218.2 per head; five average Leicester ewes, at the same time, aggregated 991 pounds, or 198.2 each. In 1874, the fleece of the Cotswolds averaged 14 pounds and of the Leicesters 13 pounds; in 1875, 13½ pounds and 11½ pounds; in 1876, 12½ pounds and 10½ pounds. In the spring of 1876, the Cotswold ewes produced 220 per cent. of lambs and the Leicesters 145 per cent. An acre of perennial rye-grass will carry five large Cotswold sheep through the year. The wool is excellent for combing, and commands the highest price in market.

Mr. Reed incloses an article on sheep-farming in Oregon, written by Mr. William Watson, in which the adaptation of Eastern Oregon and Eastern Washington for sheep-raising is claimed to be unsurpassed by any of the great sheep-raising countries of the world. Pasturage of native grasses is abundant and nutritious, with ample supplies of water. The atmosphere is pure and balmy. No malaria lurks in the air, and atmospheric disturbances are few and not severe. Men of small capital will find chances of profitable settlement. A section of land, 640 acres, may be purchased at $750 to $1,000, with some improvements. But outside of this area a vast surface of unappropriated pasturage promises abundant food for live stock. Government lands are regarded as free quarters by settlers. A shepherd should be employed for every 2,000 head or less.

A flock embracing 2,000 ewes, at $3 per head, would cost about $6,000 for the female breeding-animals. During the first year the loss on stock will be covered, on an average, by 5 per cent. of the investment, or $300; the wages of a shepherd, at $40 per month, would amount to $480 per annum; extra help at lambing-time, $50; board of hands, $450 per annum; extra shearing, at 8 cents per head, $160; wool-bags, $100; hauling wool to market, $100; total, $1,640. Per contra, the first year's clip, 5 pounds per head, at 25 cents per pound, would amount to $2,500; 1,800 lambs, at $2 per head, $3,600; total $6,100, leaving a net profit of $4,460, or 77 per cent., on the cost of the ewes. This estimate makes no allowance for scab, which no sheep-raiser should permit to infect his flock. It can be easily checked by prompt and intelligent treatment in that climate. Winter-feed will also require some outlay, in addition, but the hay-crop can be made on the spot, at comparatively little cost.

These figures refer to the class of animals common in Eastern Oregon. The breeds here are a mingling of Cotswold, Southdown, Merino, etc. An intelligent method of breeding would soon develop a fixed type, suited to the economic demands of the country. Mutton-production should be combined with wool-production. Probably a cross between the Leicester and the Merino, giving a medium-sized sheep, with a heavy fleece and good mutton, will meet the requirements

Western Oregon has the advantage over Eastern Oregon in its more abundant facilities of transportation. The eligible Government lands are here mostly appropriated by settlers. Many of them came out to the country under the strong inducements held out by the Government from 1845 to 1854, when permanent *bona-fide* settlers were endowed with 640 acres each. This policy covered Western Oregon with large farms, but there is an increasing disposition among these landowners to dispose of their real estate. Good lands in the Willamette Valley can be had at prices ranging from $10 to $30 per acre.

Mr. William H. Barnhart, of Pendleton, Umatilla County, in a letter to Mr. Reed, states that in Eastern Oregon sheep, with few exceptions, are low grades of Cotswold and Merino, kept in flocks of 1,000 to 2,000. Within two or three years several hundred full-blooded Cotswold and Merino rams have been imported, a measure which cannot fail to raise the grade of sheep in this region. Indeed, a decided improvement is already noted in the average weights of fleece and in the length and fineness of the fiber. The clip of 1876, a favorable year, will probably average six pounds per head, against less than five pounds in 1875, when the flocks were in comparatively low condition. The lambing-season commences about March 25; the average per cent. of lambs that survive the inclemencies of the weather is about 70. The price of wool has averaged about 25 cents per pound for the last ten years. Mr. Barnhart's estimates of cost do not differ greatly from those of Mr. Watson. The wool-production of Eastern Oregon suffers from a very awkward and unscientific handling of immense natural resources. The greatest drawback to sheep-raising here is found in the deep snows in certain localities. Forty to sixty days' feeding is esteemed a very hard winter by farmers, who generally calculate upon an open range during almost all the year.

Mr. Watson says that the wool-product of the Umpqua, Willamette, and Rogue River Valleys is of a high quality, both of long and short staple, and commands the highest price in the Pacific and eastern markets. After many years' experience, he gives preference to long-wooled sheep in those valleys, such as the Leicester, Lincoln, and Cotswold. New Oxfords have been successfully domesticated, yielding very excellent wool. The fleeces of any one of these breeds may easily be made to average 12 to 15 pounds each, where the sheep are properly cared for. The increase may be raised to 120 per cent., or even 150 per cent. In 1874, some Leicester ewes, only one year old, averaged 13 pounds of wool, and Cotswolds from 17 to 20 pounds. For Eastern Oregon, the cross of any one of these breeds with high-grade Merino ewes presents the most desirable qualities. The weight of fleeces in Eastern Oregon averages from 4 to 7 pounds per head, and the increase of lambs may be made to reach from 70 to 120 per cent. In Eastern Oregon, upon natural grasses, about two sheep to every three acres of pasturage is the limit beyond which flocks should not be increased. In Rogue River Valley, if land were properly laid down to alfalfa, it would probably be practicable to subsist seven sheep for seven months on the product of a single acre. They should then be removed for the other five months to the rich pastures east of the Cascade Mountains. Alfalfa can be made to yield from 6 to 10 tons of hay per acre. When the crop is raised and secured, the sheep should be brought back and fed upon it, thoroughly chopped. Improvements in transportation will soon reduce the cost of marketing wool in San Francisco from 5 cents per pound to 2 cents. This will also open up a demand for mutton-sheep, yielding the farmer 8 to 12 cents per pound. The grasses of Oregon, it is claimed, are finer and more nutritious than those of California, hence at the close of win

ter the condition of Oregon sheep is uniformly better than those of California.

IRON AND STEEL PRODUCTION.—The decline in the production of iron and steel was greater in the second year of the prevailing financial depression than in the first. The only general increase in manufacture was in Bessemer-steel rails, crucible cast steel, open-hearth steel, and nails and spikes; but individual States have manufactured more largely than in 1874, viz, Maine, Virginia, Georgia, Indiana, Illinois, and Wisconsin.

The following statement of the net tons manufactured in the years indicated is made on the authority of the American Iron and Steel Association:

Kinds manufactured.	1872.	1873.	1874.	1875.
Pig-iron	2,854,558	2,868,278	2,689,413	2,266,581
Rolled iron, including nails and rails	1,941,992	1,966,445	1,839,560	1,890,379
Bessemer-steel rails	94,070	129,015	144,944	290,863
All other rails for railways	905,930	761,062	584,469	501,649
Street-rails	15,000	9,430	6,739	16,340
Nails and spikes	203,261	201,235	245,609	236,343
Crucible cast steel	29,260	34,786	36,328	39,401
Open-hearth steel	3,000	3,500	7,000	9,050
All other steel	7,740	13,714	6,353	12,607
Blooms from ore and pig-iron	58,000	62,564	61,670	49,243

The decline in rolled iron has been very small, and mainly in 1874, the product of the past year being greater than in the preceding. Pennsylvania produces nearly a third of all the rails. The sources of production of pig and rolled iron are, in detail, as follows:

States.	Pig-iron of all kinds, in net tons.				Rolled iron, in net tons.	Iron and steel rails, in net tons.
	1872.	1873.	1874.	1875.	1875.	1875.
Maine	.....	780	1,661	2,046	8,100	4,050
New Hampshire	.....	.....	.....	.....	1,000	.....
Vermont	2,000	3,100	3,450	2,400	6,204	6,204
Massachusetts	17,070	21,136	27,991	21,255	99,712	18,391
Rhode Island	.....	.....	.....	.....	9,584	.....
Connecticut	22,700	26,977	14,518	10,880	9,618	.....
New York	291,155	296,818	326,721	266,431	181,606	82,960
New Jersey	103,858	102,341	90,150	64,069	55,249	941
Pennsylvania	1,401,497	1,389,573	1,213,133	960,884	738,830	255,136
Delaware	.....	.....	.....	.....	15,252	.....
Maryland	63,031	55,986	54,556	38,741	46,687	30,619
Virginia	21,445	26,475	29,451	29,985	18,843	.....
North Carolina	1,073	1,432	1,340	800	.....	.....
Georgia	2,945	7,501	9,786	16,508	10,325	6,500
Alabama	12,512	22,283	32,863	25,108	1,000	.....
Texas	619	280	1,012	.....	.....	.....
West Virginia	20,796	23,056	30,134	25,277	54,299	406
Kentucky	67,396	69,889	61,227	48,339	33,961	5,851
Tennessee	42,454	43,134	48,770	28,311	13,745	12,250
Ohio	399,743	406,029	425,001	415,893	237,591	91,775
Indiana	39,221	32,486	13,732	22,081	44,073	23,309
Illinois	78,627	55,796	37,946	49,762	200,676	188,248
Michigan	100,222	123,506	136,662	114,805	3,450	.....
Wisconsin	65,036	74,148	50,792	62,139	42,840	28,403
Missouri	101,158	85,552	75,817	59,717	31,540	17,396
Kansas	.....	.....	.....	.....	5,000	5,000
California	.....	.....	.....	.....	14,194	8,073
Oregon	.....	.....	2,500	1,000	.....	.....
Utah	.....	.....	200	150	.....	.....
Wyoming	.....	.....	.....	.....	7,000	7,000
Total	2,854,558	2,868,278	2,689,413	2,266,581	1,890,379	792,512

Exclusive of abandoned stacks, the number of completed furnace-stacks in the country, at the close of 1875, was 713, but only 293 of these were in blast. In the same year 24 new stacks were completed and 4 were abandoned; in 1874, 38 new stacks and 2 abandoned; 1873, 50 new stacks and 5 abandoned.

Bessemer-steel rails were first made upon orders in this country in 1867. In 1869, the net tons manufactured were 9,650; in 1870, 34,000; 1871, 38,250; 1872, 94,070; 1873, 129,015; 1874, 144,944; 1875, 290,863; there are also 61,058 net tons of steel other than Bessemer.

The value of imports of iron and steel in 1875 was $15,273,315, against $24,600,720 in 1874; $45,764,670, in 1873; and $61,724,227, in 1872.

Maté or Paraguay tea.—Among the novelties presented at the Centennial Exposition at Philadelphia is the maté, a decoction of the leaves of the maté tree, (*Ilex paraguayensis.*) This tree grows wild in the forests of Brazil and the Argentine Republic, especially upon the various tributaries of the Parana and Uruguay; it is also found in the valleys of streams whose waters join the Paraguay to the northeast. The tree sometimes approaches medium-sized apple-trees in height, but the leaves are gathered mostly from smaller shrub-like plants. It is stripped of its leaves and branches almost every other year. Several varieties of this tree are mentioned, especially two; the mild or choice, and the strong.

At the exposition a pamphlet, in Portuguese, French, English, and German, written by Dr. Antonio Joaquin de Macedo Soares, presents the claims of the province of Parana, which exports mostly through the ports of Paranaguá and Antonia. The exports of the fiscal year ending June 30, 1870, amounted to 31,777,408 pounds, and rose the following year to 36,073,713 pounds. The home consumption in Parana is almost 9,000,000 pounds per annum and in Rio Grande do Sul nearly four times as much, not including large quantities consumed by natives, without having been marketed. An arroba (32.39 pounds) is estimated as sufficient for the consumption of a single individual about six months, if taken three times per day, and this would cost about $4 per annum, whereas an equivalent of coffee or of black or green tea would cost much more.

It is claimed that the maté beverage is very nourishing. It is prepared either from the powder of dried leaves pulverized or from the leaves themselves by infusion. It needs intelligent experiment and observation to develop the real qualities of the plant, but it has become the favorite beverage of a large portion of the people of South America. It is less exciting than either tea or coffee, as it contains less of essential oil, while its larger proportion of resin makes it a better diuretic than coffee, though it is less rich in this element than either green or black tea. It has a pleasant aroma, and when taken with milk and sugar it is a good substitute for tea or coffee. It slightly stimulates the nervous system, but not to the point of sleeplessness. It contains as much theine as tea and double the quantity found in the same weight of coffee-grains. It is sold in Rio Janeiro at about ten cents per pound.

British live-stock production.—The question of meat-supply is still agitating British economists. The decrease of horses and the rise in their market value constitute another source of uneasiness. An effort was recently made by the Royal Society of England to ascertain whether the problem of production in the United Kingdom did not embrace some latent conditions the development of which would secure to the British farmer a wider margin of profit in the production of horses and beef-

cattle. In the first article of the society's report for 1876 are embodied the results of an investigation, as compiled by W. McDonald, editor of the North British Agriculturist, from public documents and from original statements by intelligent and representative agriculturists in different parts of the country. The writer concludes, from the facts brought out by the investigation, that farmers would be benefited by a closer attention to live stock, especially cattle.

Live-stock breeding has for some years been more profitable than grain-raising, and present indications point to a continuance of this state of things, which is attributed in part to the superior quality of British beef and mutton, in part to the difficulty of importing foreign products that can rival them in the market, and in part to the abundant imports of excellent grain from abroad. British farmers can supply a much larger proportion of meat than twenty years ago, but the demand has kept pace with the supply.

The total number of cattle in Great Britain in 1875 was 6,012,824, against 5,337,759 in 1871 and 4,993,034 in 1867; an increase of 1,019,790, or over 24 per cent., in eight years. The aggregate of 1875 was 112,667 less than in 1874. Ireland reports 4,111,990 in 1875, an increase of 404,187, or nearly 11 per cent., in eight years. The total for the United Kingdom in 1875 was 10,124,814, against 8,731,473, an increase of nearly 16 per cent. in eight years.

Sheep-raising has not been so expansive, though it is well known that in some districts sheep have done better than cattle, in some cases replacing the latter. This is traceable to the rinderpest. In 1867, the number reported in Great Britain was 28,919,101; in 1868, 30,711,396; in 1871, the number had fallen to 27,119,569; it rose in 1874 to 30,313,941, but fell to 29,166,139 in 1875. Ireland had 4,826,015 in 1867, 4,228,721 in 1871, 4,437,613 in 1874, and 4,248,158 in 1875. In 1875, the United Kingdom had 33,414,297.

The number of horses in Great Britain fell from 1,461,061 in 1869 to 1,276,444 in 1873; but the number has since increased, though not yet equal to that of 1869; in 1875 the number was 1,340,129. In Ireland, horses rose from 527,248 in 1869 to 540,745 in 1872, but fell to 526,160 in 1875. The total of the United Kingdom for 1875 was 1,866,289.

The quantity of beef and mutton annually produced has greatly increased within thirty-five years. In 1841, but 4,500 cattle were on sale in the London Christmas market, the price ranging from 3*s.* 8*d.* to 5*s.* per stone of 8 pounds, averaging about 4*s.* per stone, or 6*d.* per pound, sinking the offal. At the Christmas market of 1875, 7,660 cattle were exposed to sale, at prices varying between 4*s.* 4*d.* and 6*s.* 6*d.* per stone, and averaging nearly 6*s.* per stone, or 9*d.* per pound; an increase of 50 per cent. since 1841. The advance in the lower grades has been still greater. In 1841, the choice animals were, in quality, further ahead of the general supply through the year than they are now. The June prices of cattle during the last thirty years show a greater advance than the Christmas prices: they averaged 4½*d.* per pound in June, 1849; 4¾*d.* in 1851; 6¾*d.* in 1855; 6*d.* in 1859; 6¼*d.* in 1864; 7*d.* in 1868; 8*d.* in 1871, and 8¾*d.* in 1875. These are the estimated averages of prices paid to the farmer or breeder for animals on the hoof. The June prices of mutton averaged as follows: 1849, 5*d.* per pound; 1851, 5*d.*; 1855, 6¾*d.*; 1859, 6½*d.*; 1864, 6¾*d.*; 1868, 7½*d.*; 1871, 8½*d.*; 1875, 9*d.* While the cost to the consumer has been thus enhanced, the share of the producer has not increased in a similar proportion. The scope of middle-men's profits has greatly enlarged within the past few years. Even country markets now support a class of intermediate salesmen, who make quite a "nice thing" of it.

The increase in the demand for butchers' meat has been greater than the increase of population. The proportion of persons consuming animal food has increased 50 per cent. The question has been raised whether this increase has not been excessive and abnormal, greater than the healthy subsistence of the population demands. But in spite of such questions, there is more likelihood of an increase than of a falling off in the rate of consumption.

The United Kingdom, within the last three or four years, has imported an immense amount of bacon and hams, which imports alone constitute 14 per cent. of the annual meat-consumption of the British people. Excluding these two items, the live cattle, sheep, and swine, together with what are technically called "pork" and "beef," add only 6½ per cent. to the home product. Estimating that one-fourth of the cattle of the British isles are annually slaughtered, and the average weight at 6 cwt. 1 qr., the aggregate would include 2,531,201 animals and 15,820,006 cwt. of beef. Supposing that five-twelfths of the sheep are annually brought to the knife, the total number of these animals slaughtered would be 13,922,624, which, at an average of 70 pounds per head, would yield 8,701,640 cwt. of mutton. Estimating the number of swine killed annually as equal to that of the census, and that these average 10 stone, the result will be 4,348,941 cwt. of pork. The grand total of beef, mutton, and pork, of home production, is 28,870,587 cwt., or 3,233,505,744 pounds.

Of cattle, including all grades, from calf to bulls and oxen, 263,698 were imported during 1875, almost entirely for direct consumption. Allowing 4½ cwt. per head as their average weight, they would yield 1,186,641 cwt. of beef. Of sheep, 977,863 were imported, averaging, probably, 13 pounds per quarter, and yielding 454,007 cwt. of mutton. Finally, 71,928 live swine yielded about 1 cwt. each, making 1,712,576 cwt., or 191,808,512 pounds of fresh meat from imported animals.

The foreign imports of dead meat are given at 2,898,293 cwt. of bacon, hams, and "pork," and 216,516 cwt. of beef; total, 3,114,809 cwt., or 348,858,608 pounds. The grand total of meat-consumption, domestic and foreign, is 3,774,172,864, or 114 pounds *per capita* of the population, estimated at 33,000,000. The portion imported is thus a little less than 15 per cent. Adding the fish, poultry, and wild game annually marketed, the British people must be considered as large meat consumers.

TEN YEARS OF FRENCH AGRICULTURE.—A French agricultural journalist, reviewing the progress of farming in France during the past ten years, finds considerable progress in co-operative effort among the farmers, and a gratifying development of individual character and intelligence in certain quarters, but too much reliance is still placed upon the initiative and co-operation of the government in enterprises that properly belong to individual or associated effort. Too much of what was graphically called "official agriculture" still subsists. The reform by which this incubus is to be dispelled is more radical and tedious than many sanguine Frenchmen are disposed to believe.

Ten years ago the government of Napoleon III prosecuted an inquiry into the causes of agricultural crises, the fluctuating yields of the different crops, the steady increase of wages, rents, and taxes, and an attempt was made to devise some method of relieving these difficulties. The facts elicited pointed to the commercial treaties with foreign powers and to a defective internal administration, involving an ill-distributed and oppressive taxation, a terrific waste and misdirection of funds in

internal improvements, an excessive accumulation of warlike armament, an undue tendency of capital and labor to great cities, luxurious habits of the citizens, and neglect of the means of influencing the action of government. These clear indications were adroitly evaded by the imperial commissioners, who admitted the justice of the complaints made by the agricultural interest, but criticised the proposed methods of relief. The foreign policy of the country could not be disturbed; great military and naval armaments, and a large expenditure in internal improvements were imperatively demanded to maintain the prestige of the empire. Hence the taxes must be kept up and the farmers must "grin and bear it." Yet, in spite of the restrictions and oppressions of misgovernment, French agriculture has during the past decade made very encouraging progress.

The industrial system of the north is pivoted upon the sugar-beet. Here high culture has ever led in the march of improvement. The splendid productive power of this region has attracted the attention of this government as a large tax-paying region. In fact, the policy of some administrations has emulated the wisdom of the man in the fable who killed the goose that laid the golden eggs. It had passed into an official parable that each hectare of this region would bear an average tax assessment of about 2,000 francs, or at the rate of $160 per acre. Some sapient political economists in official circles insisted that the government ment should attack the best resources and get money wherever they could get it most easily, but a strong protest was heard in quarters more entitled to respect, urging the impolicy of crippling resources in process of development. It was urged that the most profitable element in the sugar-beet industry to the country at large is not the manufacture of sugar and alcohol, which yield so large a basis of taxation, but in the immense amount of fertilizing matter which the beet yields as stock-feed, enabling the farmers of this region, with their heavy taxes, high values of real estate, and high wages of labor, to compete with the cheap products of vast unfertilized regions abroad, in which what is called culture is but a spoliation of surface fertility. The policy of the state in the treatment of this region has been one of craft. While ostentatiously distributing a few millions of francs with one hand, in agricultural prizes, with the other it has been stealthily and noiselessly depleting the system of its strength by taxes bearing directly upon its most vital points. French farmers are so accustomed to routine and so unused to look beyond their own immediate horizon, that these abuses have passed unchallenged, and the grievances uttered by a few of the more intelligent, not being supported by the general voice, have failed to awaken official attention to these oppressions. Meanwhile intelligent farmers appealed to science, and sought those methods of culture which would enrich the product and give a wider margin of profit with which to meet the grasping power of taxation. By persistent energy, and in spite of adverse circumstances, the sugar interest has made great advancement within the past ten years.

Southward is a region of far different character, in which the *intensive* culture of the north, after ample experiment, has been abandoned and what is called *extensive* culture has been adopted. The maize-plant is the key of this system, as the sugar-beet is in the north. Fossil superphosphate of lime furnishes a stimulating fertilizer, and immense masses of forage-plants give rise to extensive stock-feeding and large accumulations of barn-yard manure.

Still further southward is the region of the vine, the olive, and the mulberry. Here rocky, dry, thin soils, unsusceptible of high culture, have

been utilized and an immense production has been realized, though the dreaded *phylloxera* has threatened destruction in several departments. The tax-gatherer has an intimate connection with this region, while the wine interest has been the scare-crow of foreign-tariff regulators. Other wine-making countries have surplus products to export, and any unfriendly legislation may be expected to react in the shape of reprisals upon French exports. The cautious foreign policy of France has measurably avoided the alternate perils of excessive foreign competition at home and of closed markets abroad. The collision of interest once supposed to exist between the vine and sugar-beet regions has been obviated. It is found cheaper to re-enforce the weak wines of the south with alcohol from the beet than to distil it from grapes. Sericulture, an important interest of this region, has suffered from the malady of silk-worm eggs, requiring a renewal of the stock from oriental countries. But, in spite of causes which have threatened the stability of these southern industries, substantial progress is believed to have been secured. Scientific culture has narrowed the range of disastrous influences, and the southward extension of some northern crops has diversified the culture of this region, giving greater stability and more certain returns.

A large number of French farmers command but narrow resources, realize limited returns, and are under pressure to sell as soon as possible after harvest. This is the farming of the moors, of recent forest-clearings, and of natural pastures. Popular delusions as to the practicability of redeeming these poor lands from their comparative sterility have been generated and stimulated by corrupt artifices, and an important function of agricultural journalism has been to puncture these bubbles and explode these delusions, which have entailed great losses upon parties but little able to bear them. But the increased activities of commerce and other changes of circumstances have largely tended to redeem this class of lands from the class of unprofitable culture, and to utilize what would otherwise be a waste.

The questions of share-farming and rent-farming have approximated a settlement, and the profitable circumstances and limits of each are becoming much better understood than formerly. Great soil-improvements, with facilities for irrigation, have placed many previously-uncultivated soils in the list of profitable culture. The cultivation of these soils by their actual proprietors has removed one of the difficulties that embarrassed a large class of cases. The extension of the methods of economic science to lands of inferior fertility has also broadened the area of cultivation. The relations of supply and demand are better understood than they were ten years ago, and hence agricultural enterprise has been directed to far more profitable results. The writer of this *résumé* sums up the great benefit of the past decade in the close approximation of men of science, of men of labor, and of men charged with governing society, and the more complete harmony resulting from a more thorough interchange of views. The causes of friction are in process of removal, and the productive resources of France have consequently received a higher development.

Agricultural wages in France.—M. De Foville, in the *Economiste Français*, gives a review of the changes in the wages of farm-labor in France during the past half century. The facts indicate a great improvement in the conditions of rural laboring-life. Fifty years ago great destitution, and occasional starvation, were the salient features of the condition of the rural working classes. A great amelioration has been wrought during the last half century, and those revolting extremes of suffering are no longer heard of.

In 1788, the annual income of a family of farm-laborers, by day's work, amounted to about 200 francs, which was about 20 francs greater than in 1700, under the closing days of the splendid but destructive reign of Louis XIV. Twenty-five years later, during which the old monarchy, gangrened with corruption, had been broken up by the cataclysm of the revolution and replaced by the empire, the wages of farm-labor had doubled in most of the departments. At the restoration of the Bourbons, in the person of Louis XVIII, Chaptal estimates the average recompense of a laborer at 1.25 francs per day, or 375 francs for a year of 300 working days; the income of a female laborer was estimated at 120 francs, or 60 centimes per day, for 200 working days. M. Moreau de Jonnès thinks that, in 1813, families, as a whole, averaged about 400 working days in the year, counting the engagements of different members, which would give an aggregate wage at least double what it was during the reign of Louis XIV.

M. De Foville attributes these beneficent changes to the social reforms of the revolution, which bore fruit in spite of the frantic excesses of the anarchical *régime* of the convention and of the bloody wars of the empire. The last remnant of feudalism was eliminated from social order. The peasant was emancipated and placed before the law upon a footing of entire equality with those who were lately his masters and *seigneurs*. He could choose his own field of labor and stipulate his own wages, which were no longer fixed by arbitrary enactment. The public sale of national and confiscated real estate gave a great impetus to the development of small proprietorships, a change which had begun under the old monarchical *régime*. The peasant was not only liberated, but enfranchised, and the means placed within his reach of acquiring an ownership in the soil. Whatever may be thought of the justice of the wholesale confiscations ordered by the revolutionary government, it is beyond doubt that these measures resulted in the elevation of the laboring classes, not only those who became land-owners, but also day-laborers.

The next twenty-five years, from 1813 to 1838, were a period of comparative peace and prosperity. Prices remained comparatively stationary to its close, but the development of manufacturing enterprise had lowered the price of its products. Meanwhile the advance of agricultural wages continued; yet about the beginning of the reign of Louis Philippe the price of day's work began to oscillate from 0.75 francs to 1.75 francs. M. Charles Dupin estimates the average income of a laboring family at 475 francs per annum, ranging from 503 francs in 33 departments of the north and west to 441 francs, the average of all the others. In 1840, according to M. Moreau de Jonnès, the average had risen to 500 francs per annum. Since the middle of the present century the French government has prosecuted several *enquêtes agricoles*, prominent among which are those of 1852 and 1862. These inquiries are accepted by M. De Foville as embracing a large proportion of truth after their errors have been eliminated by a critical scrutiny and by comparison with cantonal statistics. The differences between the results of this scrutiny and those of the *enquêtes* is trifling, showing a substantial agreement in two independent lines of inquiry. In 1852 a day's wages averaged 1.42 francs; in 1854, 1.54 francs; in 1855, 1.61 francs, showing an enhancement of 13 per cent. from 1849 to 1853. In 1862 the day's wage averaged 1.85 francs, an increase of 30 per cent. in ten or twelve years.

In the twenty departments paying the highest prices for farm-labor the daily wages in 1849 ranged from 1.47 francs in Lot-et-Garonne to 2.04 francs in Vaucluse. In 1855 the range was from 1.76 francs in Hérault to

2.38 francs in the department of the Seine. In 1862 the range was from 2.12 francs in Hérault to 3.10 francs in the Seine. The latter shows the highest rate of increase from 1849 to 1862, viz, 55 per cent. The smallest increase, 7.84 per cent., is found in Vaucluse. But these are the most progressive agricultural regions of France. From 1849 to 1853 day's labor in Côtes-du-Nord was paid only 0.8 francs per day, and in 1862 had increased to only 1.14 francs, or at the rate of 42½ per cent. In the remaining departments the increase was between 17 and 44 per cent., but in all the wages were very low. The average increase was about 33 per cent. In 1852 women were paid on an average 0.89 francs per day, without board, or 0.47 francs with board. In 1862 the daily wage had risen to 1.14 francs without board and 0.62 francs with board, the former having increased 28 per cent. and the latter 32 per cent. Children, without board, received 0.61 francs per day in 1852 and 0.82 francs in 1862, an increase of 34½ per cent.; with board they received 0.31 francs in 1852 and 0.43 francs in 1862, an increase of 38¾ per cent. in ten years. These figures take no account of the exceptional increase of wages at harvest and vintage. During these special periods of the year men in 1862 received 2.77 francs per day without board or 1.82 francs with board; women, 1.73 francs without board and 1.13 with board; children, 1.22 francs without board and 0.77 with board.

The average number of days' labor per annum in 1862, for men in the eight departments giving the largest amount of employment, for men ranged from 265 days in Pas-de-Calais, to 275 in Seine; for women, from 192 in Pas-de-Calais, to 249 in Var; for children, from 140 in Pas-de-Calais, to 193 in Var. In the eight departments in which rural employment was least active, especially among the mountains, the average number of days for men varied from 156 in Savoy, to 183 in Meuse; for women, from 118 in Savoy, to 152 in Haute-Saône; for children, from 81 in Savoy, to 120 in Ariége. The average for the whole country was 226 days per annum for men, 172 for women, and 129 for children. A family in which the father, mother, and one child obtained the average number of days' labor received 550 francs per annum in 1852, and 720 francs in 1862. Besides this, a good number found extra employment in special industries. In 1700, a laborer received but 0.5 franc per day, and his family averaged 180 francs per annum; in 1788, 0.6 franc per day, and 200 francs per annum; in 1813, 1.05, and 400; in 1840, 1.30, and 500; in 1852, 1.42, and 550; in 1862, 1.85, and 720; in 1872, 2, and 800. Thus, the daily wage of a man doubled in the 25 years from 1788 to 1813, and quadrupled in the 84 years from 1788 to 1872.

But in order to test the point whether this advance of wages represents a real improvement in condition, the writer makes a calculation in regard to the expense of living and the quality of its elements. Averaging families at five persons each, and allowing each person 3 hectoliters, or 8½ bushels of wheat per annum, the quantity consumed by each family will average 15 hectoliters, or 42½ bushels per annum. In 1700, when the annual family income was 180 francs, the hectoliter was worth 18.85 francs, and the quantity above assigned for family consumption cost 283 francs per annum, or 103 francs more than the family income. In 1788, the annual family income had risen to 200 francs, and the average price of wheat had fallen to 16 francs per hectoliter, yet the cost of the 15 hectoliters was 240 francs, or 40 francs more than the family income. During the next twenty-five years, ending in 1813, the average family income had doubled, but the price of wheat had also risen to 21 francs per hectoliter, making 315 francs for 15 hectoliters, or 85 francs less than the family income. In 1840, the income had increased 25 per

cent., being 500 francs per annum, the cost of wheat had fallen a little, being 20.32 francs per hectoliter and 305 francs for 15 hectoliters, leaving a surplus of 195 francs of the income. In 1852, the income, 550 francs, had advanced 10 per cent., and the price of wheat had fallen to 19.45 francs per hectoliter, or 292 francs for 15 hectoliters, leaving a surplus of 258 francs. In 1862, the income was 720 francs, and the wheat, at 21.08 francs per hectoliter, amounted to 316 francs, leaving a surplus of 404 francs. Finally, in 1872, the income, 800 francs, after deducting 356 francs for 15 hectoliters, at 23.74 francs each, left a surplus of 444 francs. In 1700, the laboring family could pay only 63 per cent. of the cost of the amount of wheat necessary to their support, to say nothing of other and pressing necessities of their being. In 1788, they could pay 83 per cent. of the bread ration; in 1813, they could pay the whole, with a surplus of 27 per cent.; in 1840, the surplus was 64 per cent.; in 1852, 88 per cent.; in 1862, 127 per cent.; in 1872, 125 per cent.

But bread, the most essential of family provisions, has not enhanced in price as rapidly as other necessaries of life. The progress of agriculture and the development of international commerce by means of improved methods of transportation, have made the price of grain more uniform. Closer relations subsist between supply and demand. The scarcity of one section is relieved by the surplus of other sections made available by easy communication. But the prices of meats, vegetables, drinks, rents, &c., have followed a higher ratio of progression; clothing, furniture, &c., however, became considerably cheaper as the century advanced. M. De Foville calculates the actual expenses of living for a working family, at three different periods in the time under consideration, as follows:

Articles.	1785 to 1790.	1810 to 1815.	1870 to 1875.
	Francs.	*Francs.*	*Francs.*
Food	350	400	630
Rent and taxes	25	40	60
Fire and light	20	25	30
Clothing	150	140	80
Incidentals	30	45	50
Total	575	650	850

To procure the amount of comfortable subsistence which now constitutes the rule among French villages to-day, the family of the workingman of the first empire needed 650 francs per annum, and received only 400; under Louis XVI, they needed 575 francs per annum, and received only 200, or a little over a third. The grandfathers of the French peasantry of to-day had but two-thirds, and their great grandfathers but one-third of their allowance.

The above facts indicate an unmistakable and substantial improvement in the condition of French working-men, yet it would be illogical to conclude that all suffering has been removed. But extreme poverty, M. De Foville thinks, is mostly the result of individual imprudence, rather than of necessity or external circumstances. A comparison of English and American statistics shows that the margin between wages and necessary cost of living has widened more rapidly in France than in either England or the United States. In Asia Minor, people are to-day compelled to live as slenderly as French working families did one hundred and fifty years ago. In Russia, day labor commands wages ap-

proaching to what is usual in France, but intemperance and superstition there largely detract from the amount essential to a comfortable subsistence. Germany presents a great variety of conditions. In some parts of Silesia, labor commands but 0.85 franc per day in summer and 0.7 in winter, while in the Rhine provinces it runs up to 5 francs, or $1 per day. In England, farm-laborers have struck for wages above 1 shilling per day. The condition of farm-laborers, M. De Foville contends, is incontestably superior to that of any other country in Europe. He thinks the high prices of living in America counterbalance the high wages of labor in different parts of the country. In the United States, he thinks, women have far less facilities for gaining a subsistence than in France. In the latter conclusion, however, the writer seems to have generalized too hastily and from imperfect data.

DEPRESSION OF FRENCH SUGAR-PRODUCTION.—The general councils of two departments of France, Aisne and Pas-de-Calais, have formulated very weighty complaints against the present status of legislation affecting the beet-sugar production. From the unanimous protest of Pas-de-Calais it appears that this great interest is passing through a crisis of increasing gravity, in which a variety of agricultural and manufacturing industries are more or less compromised. The results already developing involve the ruin of a large number of sugar-factories, great losses to agriculturists from the cessation of demand for sugar-beets to manufacture, the progressive decline in the value of lands devoted to this branch of culture, a notable stagnation in several minor mechanical industries, great suffering among the agricultural working classes, and a general impoverishment of the sugar-producing population. The causes of these evils are said to be the heavier imposts levied upon this industry than in foreign countries, and the undefined character of the legislation by which those imposts have been enacted; within two years the tariff has been thrice revised, and that these revisions have but complicated the uncertainty and increased the burden upon production. The remedy proposed is another revision, more intelligent, directed to the reduction of the burdens upon this important industry.

PROPOSED PURCHASE OF AGRICULTURAL MACHINES BY FRENCH COMMUNES.—M. Teisserenc de Bort, French minister of agriculture and commerce, has issued a circular to the departmental prefects, calling attention to the advantages that may accrue to agriculture from the purchase by the communes or townships of France of the higher and more expensive agricultural machinery. French farmers in some sections are too poor and too little impressed with the advantages of superior culture to conceive or execute the idea of combining their small capital for the purchase of machinery. The minister calls upon the prefects to study the question in its various aspects, and to submit to the central government the results of their cogitations upon this subject.

ITALIAN AGRICULTURE.—A report of Mr. Miraglia, chief of the division of agriculture of the Italian ministry of agriculture, industry, and commerce, presents a *résumé* of the elementary schools of agriculture, of which not fewer than sixty-five were opened during 1875. This educational movement extends to all parts of the peninsula. There are normal schools at Palermo, Messina, Caserta, Bari, Arcoli, Picino, Potenza, Acqui, Perouse, Pisa, Reggio d'Emilia, and Pignerol, besides special schools, the number of which is on the increase. Conferences among agriculturists have also become frequent, six hundred and one being held during 1875, in sixty-five communes, with an attendance of 2,500 persons. The subjects of discussion were olive culture, sylviculture, the

maladies of garden-plants, fertilizers, rotation of crops, irrigation, cattle and sheep husbandry, &c. At the Bacologia station of Padua long conferences were held in regard to silk-worms. Farriery was treated at the station depots of Catana, Crema, Ferrara, Pisa, Ozieri, Reggio d'Emilia, Milan, and Naples. Crowded conferences in regard to viticulture and wine-making were held at Monteleone, Cantazaro, Nicastro, Cotrona, Rogliana, Cosenza, Castrovillari, and Acri. Facts were presented at these conferences showing that with a proper direction of effort Italian wines might be made to excel the best Spanish and Portuguese wines.

The entomological station of Florence shows the studies of the Cryptogamic Laboratory of Pavia in regard to the maladies engendered in plants by cryptogams and parasites. The agricultural laboratories of Bologna and Sienna have given their powerful aid to these and similar investigations—numerous analyses of soils, fertilizers, wines, waters, potable or irrigating, forage plants, farinaceous products, and alimentary substances generally. Of silk-worms 822 specimens were examined, besides 193 couples of butterflies. Agricultural expositions have been numerous and enthusiastic. At Ferrara 600 exhibitors took part; at Florence 351; at Portici 489; at Palermo 1,529.

Regional conferences have been supplemented by local exhibitions, under the auspices of communal commissioners, and restricted to special objects, such as the construction of machinery, agricultural implements, planting of vine-stocks, stock-raising, oil-making, raising of water from wells, movable cabins of Alpine pastures, &c.

The work of replanting forests has not been slackened. The ignorant vandalism which caused the destruction of the original woods has given place to a zeal for their preservation and renewal. This new-born sentiment, however, is more active in some provinces than in others. During 1875 the administration gave formal consent to the clearing of nearly 50,000 acres of woodland, of which about 28,000 acres were in the southern provinces, on the Adriatic slope of the Apennines, 5,400 on the Mediterranean slope of the same, 1,600 in Piedmont, 1,300 in the Marches and Umbria, 7,600 in Sicily, and 1,350 in Sardinia. Some of these clearings are but temporary, looking to the replacement of worthless woods by those of greater value, such as the gigantic eucalyptus, the pine, the the fir, the cedar, &c.

Italy stands in the front rank of wine-producing countries. The International Ampelographic Commission, which sat at Colmar, in September, 1875, after a careful examination, gave expression to the liveliest appreciation of the viticultural resources of the peninsula. An admirable local and national organization of the viticultural interest had brought the whole subject fairly before the commission. In this great branch of national enterprise citizens co-operate with exemplary zeal with the government authorities to bring out the most remunerating results. This is attested by the growing export of Italian wines, which now reach all foreign markets, whereas formerly they seldom found a demand except in France. The character of these wines is constantly improving. The former bad habit of producers, of multiplying their brands, is disappearing, and the time formerly lost in imitating foreign brands is better employed in perfecting their own products. This is indeed a notable improvement, and marks the transition from the period in which Italian agriculture ignored its real forces and that in which it became conscious of its independent powers.

Oil and grain culture have also advanced in productiveness and value. The latest acreage and product of these cultures are given as follows: Wheat, 11,556,062 acres, producing 146,970,713 bushels, or 12.72 bushels

per acre; maize, 4,192,253 acres, producing 88,251,466 bushels, or 21.05 bushels per acre; rice, 574,948 acres, producing 27,862,168 bushels, or 48.46 bushels per acre; oats, 985,057 acres, producing 21,123,502 bushels, or 21.44 bushels per acre; rye and barley, 1,148,517 acres, producing 19,005,698 bushels, or 16.5 bushels per acre; other cereals, 1,516,034 acres, producing 15,871,754 bushels, or 10.47 bushels per acre; grapes, 4,619,226 acres, producing 77,008,600 bushels, or 16.67 bushels per acre; olives, 2,224,759 acres, producing 14,189,100 bushels, or 6.3 bushels per acre. The product of potatoes amounts to 7,049,879 quintals; hemp, 959,177 quintals; flax, 234,057 quintals.

These statistics are gathered according to a regular system, embracing all the leading agricultural facts of the country. This report is the inauguration of a regular system of reports embracing all the elements of production, and all the data attainable from the study of the agricultural resources of Italy. Pastoral industry will hold an important place in these publications.

In spite of apparently favorable conditions pastoral industry has not been remarkably productive. This fact has been a subject of anxious consideration, both by the ministry of agriculture and the regional and other conferences. Efforts are being made, under authority of the government, for the improvement of horses, cattle, and sheep. In 1875, the government had at its disposal but 277 stallions, which served 9,711 mares, averaging about 35 each. Asses and mules seem to retrograde, while cattle present an appreciable and steady amelioration. The latter result is attributed to greater care in breeding and to more generous feeding and treatment. Last year the minister of agriculture imported from Holland five horned cattle, of which four were pregnant, and placed them in the experimental zootechnic establishment at Reggio d'Emilia, to breed with English cattle. The points of improvement sought pertain to qualities enhancing the flesh and milk-product.

Sheep and swine have also received very perceptible improvement. The errors of the previous administration, as well as its successful attempts, have been carefully studied, and practical lessons therefrom fully appropriated.

Domestic silk-worm production seems to be increasing from the fact that in 1875 the producers purchased from abroad 199,000 fewer cartons than in 1874. There are 39 special observatories of silk-worms in the country, at the head of which is that of Padua. These institutions, by the results of their investigations, have largely contributed to the advance in sericulture that has taken place within a few years past. Apiculture has also made perceptible advances.

The division of old feudal properties into modern freeholds marks an important transition in Italian agriculture. In the southern provinces alone 1,117,313 acres of feudal lands have passed into the hands of 223,398 peasant proprietors, in tracts averaging less than five acres each. This social revolution is accompanied by works of irrigation and general improvement on the grandest scale. The result of the increased power of production just called forth will make itself felt in the immediate future.

Viticultural statistics of Hungary.—Mr. Charles Keléti, chief of the Royal Hungarian Bureau of Statistics, has published a *résumé* of the late statistical inquiries into the status of the vine-growing and wine-making interests in Hungary. He claims that the statistical method of Hungary is superior to that of other European states in the extent and thoroughness of the inquisition and the clearer and less antiquated

methods of co-ordinating the facts evolved into general principles. The statistician verified the results of his inquiries by personally visiting districts which showed any remarkable anomalies and opened an extensive correspondence with land proprietors and viticulturists in all parts of the kingdom. M. Keléti experienced some of the difficulties which have embarrassed the operations of the American Department of Agriculture, with the additional difficulty of having to collect his statistics largely through regular government officials. The tendency of cultivators to depreciate as much as possible the extent and value of their industry in the presence of those who might detail the information to the tax-gatherer showed itself in all parts of the country. The lack of statistical ideas and habits in official inquirers, who can only move in an established routine, was another source of embarrassment. Our American system of selecting boards of volunteer correspondents among the most intelligent agriculturists of the country, and of furnishing them blank forms and specific instructions, does not appear to have been suggested as a practical method in Hungary.

M. Keléti was astonished at the wide divergence between the results of his inquiries and the current estimates of grape and wine production in Hungary. Some unknown authority had stated the average annual wine-product of Austro-Hungary at 42,000,000 hectoliters, (1,109,547,600 gallons,) of which 22,000,000 hectoliters (581,191,600 gallons) were assigned to Hungary. The approximate average annual product of the Hungarian monarchy indicated by M. Keléti's inquiries is not over 5,000,000 hectolitres, (132,089,000 gallons.) This remarkable discrepancy has led him to discredit the reports of enormous wine production in other European countries in which no sifting statistical methods similar to his own had been adopted.

The kingdom of Hungary, including its vassal states of Transylvania, Fiume, Croatia, Slavonia, and the military frontier, cultivates about 1,050,995 acres in vines, or about 10 per cent. more than was indicated by an official census taken some years ago. The increase was in Hungary proper, Croatia, and Slavonia; the other sections indicate a decrease. Hungary proper embraces 80 per cent. of the viticultural area of the monarchy, while its territory is less than 70 per cent.; only 11 of the 47 vine regions indicate a declining acreage. In 5,845 communes of the whole monarchy there were 912,633 proprietors, averaging 1.20 acres; of these 4,062 communes, in Hungary proper, embraced 688,336 proprietors, averaging 1.15 acres.

Jean Hunfalvy, in his valuable "Topographical and Physical Description of Hungary," distinguishes four well-defined viniferous regions: (1) the region of the Alps and Carpathians; (2) isolated hills and mountains; (3) the low country, (Alföld;) (4) the shores of the Adriatic and the mountainous parts of Croatia and Dalmatia. The northwestern Carpathian region, at an altitude varying from 600 to 1,050 feet above sea-level, cultivates the wine only in the valleys or on southern slopes. The whole Carpathian region, from east to west, is of minor importance in vine-growing except a trachytic off-shoot to the south, extending from Eperjes to Tokay, on the Theiss River. The city last named is the market of a celebrated aristocratic beverage called by its name and produced in a hilly region to the northward called Hegyallia, embracing about ninety square miles. With this exception, the production of wines, and especially of generous wines, in the Carpathian region is confined to isolated hills and mountains. The low country (Alföld) produces an abundance of common, cheap wines for local consumption. Vine-growing is prosecuted to a great extent in Fiume, and a narrow zone of vineyards fronting the Adriatic extends

through the "regiments" Ogulini, Ottocsány, and Likka of the military frontier.

In Hungary proper 25 viticultural regions are enumerated, arranged along the Danube and Theiss Rivers; 6 in Transylvania, and 6 in Croatia, Slavonia, Fiume, and the military frontier. These regions range from 75 to 1,800 feet above sea-level, presenting a great variety of geographical conformation and of local character. The prevailing characters of the surface-soil are classified as follows: vegetable mold, 14.2 per cent.; clayey, 41.3 per cent.; sandy, 29 per cent.; gravelly, 13.7 per cent.; calcareous, 0.2 per cent.; nitrous, 0.2 per cent.; miscellaneous, 1.4 per cent. The climate presents wide variations of temperature, with a very unequally distributed rain-fall. Early frosts and long droughts are also complained of.

Varieties of grapes grown are not always such as suit the soil, climate, and situation in which they are planted. There is now a tendency to reduce the number of varieties to those which indicate the highest results. This will simplify the processes of culture and give uniformity to the products. Both the white and the red wine regions are affected more or less by a confusion resulting from the intermingling of species and of vines of different stages of maturity. Early-ripening varieties, such as the Malvoisies, with a southern exposure, in dry seasons return but moderate yields, while in more northern regions, with a northern exposure, the same vines in the same seasons yield more plentifully. The same has been noted in regard to other aromatic varieties, such as the Riesling, Greensweet, Bakator, Zöldsylvany, Hermitage, Little White, &c. The grapes of Smolyó, growing upon the eastern and northern declivities of the mountains of Smolyó, are more aromatic than those grown on the southern and western slopes. The Riesling gathers more aroma in the cooler regions of Transylvania than on the warm southern slopes of Hungary. High temperature develops sugar and alcohol at the expense of bouquet.

In Hungary proper, Croatia, Slavonia and the military frontier the most common method of culture is by short cuttings, without props. In Transylvania 60 per cent. of the vines are raised upon circles. Long cuttings, raised on props, are very common in all parts of the monarchy. Each vinicultural region has its own peculiarities of treating the crop under different circumstances. The vicinity of Presburg is mentioned as practicing a very careful and scientific method.

As a premature vintage is injurious to the quality of grapes, efforts are made to secure uniformity in the time of gathering. The time is fixed by vote of the communal council in many vinicultural districts. In many cases it is deferred as long as possible, from the consideration that the shrinkage in quantity from full or over ripening is amply compensated by the superior quality of the wine. The sorting, separating, and fermentation of the grapes are regulated by reference to the prospective saccharine strength of the must. It is found that not over 25 per cent. of the sugar is converted into alcohol. An excess of sugar giving a larger residuum after conversion, renders the wine unusually sweet. This fact, it is said, renders it possible to recall good wine years by tasting their products. In such years, mature grapes are abundant. Hence it is that intelligent viticulturists will not commence gathering until their must indicates 25 per cent. or more of sugar, which occurs almost every year with good vine-stocks well cultivated and in favorable situations. In most of the districts the vintage takes place in October, but earlier or later in the month for different varieties and different locations. In the Hegyalja district, north of Tokay, late gathering is the rule, from the

last of October even to the middle of November. The leading object here is to make sweet wines. The mature grapes are either pulled off the vines singly or they are selected from the bunches spread out on a table or board. This wine is very sweet and aromatic, but is deficient in alcohol. The famous Szamorodni, the product of grapes from which the mature fruit has not been culled out, is less sweet, but more heady, with a delicious bouquet. The vineyards of the agricultural society of Kolozsvar show the following results: Transylvanian vine-stocks produce must ranging from 17 to 22 per cent. of sugar and from 6 to 10 per cent. of acid; Hungarian, from 18 to 21.4 per cent. of sugar and from 6 to 10.9 per cent. of acid; German, from 19 to 21.5 per cent. of sugar and from 5 to 8.6 per cent. of acid; French, from 18.1 to 21.7 per cent. of sugar and from 5 to 8.5 per cent. of acid. Transylvanian vine-stocks average 20.20 per cent. of sugar and 7.8 per cent. of acid; Hungarian, 19.91 per cent. of sugar and 7.97 per cent. of acid; German, 20.07 per cent. of sugar and 6.9 per cent. of acid; French, 20.64 per cent. of sugar and 6.4 per cent. of acid.

In Hungary there are 173,212 wine-presses; 29,252 on the left bank of the Danube average 697 gallons of wine per annum; 120,057 on the right bank of the Danube, 247 gallons; 9,709 on the right bank of the Theiss, 875 gallons; 14,194 on the left bank of the Theiss, 1,466 gallons. In Transylvania 19,963 presses average 504 gallons. In Fiume but one press is reported. In Croatia and Slavonia 36,007 presses average 450 gallons, and in the military frontier 2,973 presses average about 1,350 gallons.

According to official statistics, the average annual wine-product of the Hungarian monarchy, for twelve years ending with 1872, was about 3,996,576 hectoliters, or 105,580,744 gallons, of which 61,679,037 gallons were white wines, 17,684,815 gallons red wines, and the remainder, 26,216,879 gallons, rosy or light red wines. Of the general aggregate, Hungary proper produces over three-fourths, Croatia and Slavonia about 16 per cent., Transylvania about 5 per cent., and nearly all the remainder in the provinces designated as the military frontier. Nearly half of the whole product is reported in those *comitats* of Hungary proper which lie in the valley of the Danube.

The conditions of wine production in the Hungarian monarchy are so varied that it is difficult absolutely to designate the best wine year of the twelve ending with 1872. The year 1868 presents the largest yield, 140,325,682 gallons, and 1866 the smallest, 52,943,913 gallons. The year 1868 was the best year in the Hungarian *comitats* on the right bank of the Danube and on both banks of the Theiss; 1867, in Croatia, Esclavonia and Fiume; 1862, in Transylvania; 1870, in the military frontier, and 1871, on the right bank of the Danube. For white wines, throughout the monarchy the best and worst years were 1868 and 1864; for red wines, 1868 and 1866; for rosy wines, 1867 and 1866.

The sweet wines demand special notice. Of these the average product of twelve years ending in 1872 is stated by official figures at 283,371 gallons, of which 99 per cent. were produced in Hungary proper. This branch of production, however, is very fluctuating, ranging from 84,600 gallons in 1871 to 681,750 gallons in 1868. That is, the maximum production is nearly nine times the minimum and nearly three times the average. Only twenty-one *comitats* of the fifty-four in Hungary proper, eight of twenty-six in Transylvania, three of eight in Croatia and Slavonia, and one regiment of the military frontier, Petervarad, produce this class of wine. The *comitats* producing the greatest quantities are all in Hungary. Zemplén sometimes produces from 260,000

to 390,000; Borsod and Abaúj, from 230,000 to 260,000; Bacs, 200,000 to 225,000; Bereg, 78,000, &c.

M. Keléti uses the foregoing figures of product as the closest approximation attainable, but he expresses in more than one place his lack of entire confidence in them, especially in regard to the common wines.

The wines of Hungary are classed also as sweet wines, strong or generous wines, aromatic wines, (*vins a bouquet*,) and acidulated wines. In the first class the half-dried condition of the grapes augments the quantity of sugar, while the low temperature of the cellars retards the process of alcoholization to such an extent that the wines might be aptly designated as grape sirups. This class of wines is more suited to delicate tasting than to drinking. Hence, they are the favorites of the ladies, for which reason they are sometimes called "bonnet wines." Hungary proper produces by far the best of these, especially the queenly Tokay. The wines of Rust and St. George have also excellent reputation, but the conditions of growth, kinds of fruit, and methods of preparation of the Tokay give it the pre-eminence. The strong or alcoholic wines are largely exported to countries of cold or humid climates; the larger proportion of the white wines of Hungary proper belong to this class. The dry grapes are used only to a small extent in these wines. About half the sugar in the must is converted into alcohol. The aromatic wines take their character from their peculiar bouquet, alcohol and sugar being secondary elements. The grapes from which they are extracted do not require high temperature, for excessive sunshine dissipates their aromatic qualities. Hence, positions less exposed to the sun are chosen for these grapes. Of these wines the Riesling, Green Sweet, Bakator, Szerémi Zold, Green Grape of Syrmie, Hermitage, White Muscat, Vörös Dinka, &c., are the leading varieties. The acidulated wines are those produced from grapes not well ripened, and are used either for consumption by the poorer classes, or to adulterate the other classes of wines. Some of these have very desirable qualities, but these mostly bear names without synonyms in other languages than the Hungarian.

The average price of wines paid to producers during the twelve years ending with 1872, for the whole monarchy, was 20.68 cents per gallon, being 19.31 cents in Hungary, 22.16 in Croatia and Slavonia, 18.39 cents in Transylvania, and 22.9 in the military frontier provinces.

During the twelve years aforesaid the average expense of wine production was $14.94 per acre, or $12.54 for cultivation and $2.40 for vintage. But there is a wide range of difference between the different provinces. The *comitats* of the left bank of the Theiss average but $10.88 per acre; Croatia and Slavonia reach $19 per acre. The average total value of the product is officially stated at $21,361,000, of which $15,828,000 represent the product of Hungary proper, $1,095,000 that of Transylvania, $3,625,000 that of Croatia and Slavonia, $776,000 that of the military frontier, and $17,000 that of Fiume. M. Keléti considers these figures as entirely too low. Taking the number of acres and the average prices indicated by the most reliable statistics, he raises the annual average to $56,951,800, the maximum being $98,623,650 and the minimum $22,822,800.

M. Keléti estimates the number of wine consumers in the monarchy at 2,815,000, or about 18 per cent. of the population, who are supposed to absorb 189,388,208 gallons per annum, or 67⅓ gallons per capita. But this exceeds the maximum annual yield of 140,325,682 gallons in 1868; still more the average product, 108,580,785 gallons. Hungary, then,

instead of having a surplus, is a large consumer of foreign wines. Both the imports and the exports of wine have largely increased of late years.

M. Keléti presents some interesting facts in regard to the social condition of the viticultural population, and the energy and intelligence with which the ravages of insect and fungoid enemies, especially the *oidium tuckeri* and the *phylloxera vastatrix*, are resisted. In a comparison of Hungarian statistics with that of other European countries, he finds a large number of errors in the public estimation of this great branch of production. The results of this industry are mostly overstated. Doubtless a more accurate system of statistics will soon be inaugurated in this as well as in other branches of agricultural production.

THELEMARK CATTLE OF NORWAY.—The Thelemark race is probably the only national breed found in Norway. It is a well-defined mountain-race, and is found in its most characteristic development in the upper districts of Siljiord, Hivideseid, &c. The Thelemarks have a small carcass, full-grown cows rarely exceeding 650 or 750 pounds per head in their native habitat, but they have been observed to increase in size and weight when placed at an early age upon more luxuriant pastures or when furnished with more nutritious food. At the chief farm at Ladegaardsoen they have attained a weight of 1,000 pounds. From midsummer till the middle of September mountain-pastures are quite luxuriant, but the animals are unprotected from the occasional very low temperature of the nights. Graziers are tempted by the abundant supply of summer pasture to graze more animals than they can provide for during winter. This causes a small yield of milk during the cold season, and a thin, impoverished condition in the spring.

The Thelemarks are of slender form, small head, with well-shaped horns, sprightly movement, and bright skin coloring, varying from white to dark red, with spots and brindles. The horns are remarkably transparent, regularly curved outward and a little forward, the points ranging from 24 to 30 inches apart. The eyes are large and lively, nostrils large, ears thin, neck long, back straight, body well rounded, and hind quarters thin.

This breed has fine milking qualities. On the chief farm at Ladegaardsoen it has been for several years superseding other breeds. One of these cows, weighing less than 800 pounds, averaged about 685 gallons per annum during the three years 1868–'70, or about 9 pounds of milk per annum for each pound of live weight. It is noticeable that these cows do not yield so abundantly immediately after calving—seldom over $3\frac{1}{2}$ gallons per day—but their yield is more uniform, and their intervening periods of dryness are comparatively short. The flow of milk increases with the age of the cow. Like other good milk-breeds, the Thelemarks are liable to calving-fever, and hence should be kept on low diet for some time before and after calving.

Great efforts have been made for the improvement of this breed by more careful selection of breeding animals and by better keeping. Every year, in autumn, a cattle-show is held at Siljiord, at which prizes are distributed and lectures given by men skilled in breeding. This occasion has also been improved for the sale and purchase of animals, by the establishment of a regular market. The anxiety felt in regard to the purchase of prize animals by foreigners, and their consequent loss to the country, has been dissipated by the increasing number of fine animals on exhibition. It is found that the general interest in the matter of improvement and the more general effort of farmers has enlarged the number of superior cattle far more than sufficient to make good the

loss by exportation. Prices, also, have nearly doubled in twenty years, ranging now from $27 to $34 per head, some rare animals receiving $56.

But the Thelemarks are not profitable as meat-producers. The bulls are small and insignificant, and on being fattened become sluggish and unserviceable in covering the cows. Hence, Ayrshire bulls have been used in crossing, with considerable improvement in beef-product, but not in milking qualities. But these mixtures of blood are not looked upon with popular favor, and no prizes are awarded in Thelemark to half-breeds. The structure of the latter more closely approximates the Ayrshire than the Thelemark parent. The Ayrshires in Sweden and Norway have, of late years, fallen into discredit, on account of their liability to tubercular disease in that climate; but the mixed progeny has exhibited no such tendency. These take on weight and bring higher prices than the Thelemarks. A considerable export trade of this breed to England is one of the noticeable changes of the day.

ALGERIAN AGRICULTURE.—The French people have never been very successful as colonists, but in their latest enterprise south of the Mediterranean they seem to have planted a very permanent state. A nest of pirates has been cleared out and the highways of civilization secured from destructive incursions. This is, however, not the only benefit which France has conferred upon the civilized world. A large area has been rescued from a shiftless system of agriculture and subjected to a higher production. The semi-nomad population is placed under a *régime* of impartial justice in all the rights of property, but the occasional outbreaks of barbarian hate are punished by extensive confiscations of land, which is allotted to old French settlers and new immigrants in the proportion of one-third to the former and two-thirds to the latter class. This policy is increasing the proportion of civilized elements in the population, and promises to make North Africa an important granary of Europe. About 2,400,000 acres are now occupied for agricultural purposes by 117,175 French colonists, giving to each an average farm of over 20 acres.

During 1874, 742,000 acres were sown by Europeans with cereals, producing about 7,900,000 bushels, or $10\frac{2}{3}$ bushels per acre; 28,000 acres yielded 5,950,000 gallons of wine, or 212 gallons per acre; 2,000 acres produced 1,320,000 pounds of oil-seed, coloring-matter, &c.; 1,458 acres returned 546,400 pounds of cleaned cotton, or about 375 pounds per acre, nearly double the average of our American cotton area in 1872; 6,924 acres yielded 5,932,000 pounds of tobacco, or over 856 pounds per acre; 20,314 acres yielded 8,828,324 pounds of linseed, or nearly 435 pounds per acre. Including European and native farmers, the area in cereals in 1874 was 4,280,384 acres, producing 35,000,000 bushels, or $8\frac{1}{6}$ bushels per acre. Of this product, 7,300,000 bushels, worth $8,000,000, were exported.

The principal articles of export to Europe are cereals, linseed, vegetable fiber, wool, cattle, hides, oil, tobacco, canes, minerals, and a small quantity of silk, cotton, and madder. Algeria is essentially a pastoral and crop-raising country, but even these pursuits, with the imported capital, labor, and enterprise of the European colonists, are yet in their infancy. The average yields per acre are small for the European colonists and still smaller for the Arab, who, like an American Indian, finds it difficult to throw off his nomadic barbarism and settle down to regular industry. The land is seldom plowed to any depth, is never manured, and, through neglect, is becoming choked with noxious weeds and foul seed. The Arab element, instead of advancing in civilized industry, seems to be declining. While the value of implements owned by Euro-

pean farmers increased, during the five years ending with 1872, from $1,022,683 to $1,590,136, that of implements belonging to Arabs decreased from $366,637 to $303,126. Arab farmers are gradually getting out of the traces and resuming their wild, nomadic life, and their places are taken by Europeans.

The principal cereals cultivated are hard and soft wheat, rye, barley, oats, maize, beans, and sorghum. The wheat has a special value in European markets for the manufacture of vermicelli and other *patés*. The favorite barley is the variety called by botanists *Hordeum hexarticum*, but other varieties have been successfully grown. It is mostly used as horse-feed, but the poorer classes of people also use it. It is grown also as a forage crop, and is well adapted to malting.

Sheep husbandry is one of the most profitable branches of farming in this country, utilizing those high, barren plateaus where cultivation, to any great extent, is impracticable. Before the conquest the Arabs derived but little benefit from their flocks beyond personal subsistence and clothing, on account of lack of market facilities. But the establishment of a settled government by France has opened up this industry to the markets of the civilized world and has given a regular value to its products. Of all classes of farm-animals, including horses, asses, mules, camels, cattle, sheep, goats, and swine, the European colonists, in 1872, owned 392,975, and the Arabs 9,774,852. During the six years previous, those of the Europeans had increased 46,809, while those of the Arabs had decreased 3,688,979.

The Alpha fiber, one of the most important productions of the soil, covers 10,000,000 acres. Its value is beginning to be appreciated as a paper-making material. It is supposed that the crop raised in Algeria can be made to equal in economic value at least three-fourths of the rags gathered in the civilized world. In 1873 it was exported to the extent of 45,000 tons, which rose in 1874 to 58,000 tons, and promised by the close of 1875 to reach 60,000 tons for that year. Increasing facilities of transportation, through railways, will secure the transit of this material to the coast in increasing quantities in years to come, and bring production and consumption into close relations with each other.

The forests are valuable, but are liable to destructive conflagrations. They produce several species of oak, especially the cork-oak, the Aleppo pine, the cedar, and other valuable species of timber. The European colonists are being largely re-enforced by immigration from Alsace and Lorraine, and their villages are being extended to the forest districts. This will render the cutting and marketing of timber a more important interest in years to come.

MARKET-PRICES OF FARM-PRODUCTS FOR OCTOBER 1876.

The following quotations represent, as nearly as possible, the state of the market at the beginning of the month:

Articles.	Prices.			Articles.	Prices.		
NEW YORK.				**BOSTON—Continued.**			
Flour, superfine, State and western, per bbl.	$4 20	to	$4 75	Beef, mess, per bbl.	$10 00	to	— —
extra State, do	5 00	to	6 30	extra mess, do	12 00	to	— —
extra to choice western, per barrel	5 00	to	9 50	family, do	12 50	to	$13 50
southern extra, per bbl	5 10	to	6 25	Pork, prime, do	16 50	to	17 00
southern family, do	6 30	to	8 00	mess, do	17 75	to	18 00
Wheat, No. 1 spring, per bush.	1 18	to	1 30	Lard, per lb.	11	to	11½
No. 2 spring, do	1 10	to	1 22	Butter, New York and Vermont, per pound	18	to	33
winter, red, western, per bushel	1 05	to	1 30	western, per lb.	16	to	33
winter, amber, western, per bushel	1 05	to	1 30	Cheese, New York and Vermont factory, per lb.	10	to	13½
winter, white, western, per bushel	1 15	to	1 30	western factory, do	8	to	13
Corn, per bush.	56	to	59½	Sugar, fair to good refining, do	8⅞	to	9⅛
Oats, do	30	to	47½	Cotton, low ordinary to good ordinary, per lb.	9¼	to	10⅛
Rye, do	70	to	87	low middling to good middling, per lb.	10⅝	to	11⅛
Barley, do	97½	to	1 25	Wool, Ohio and Pennsylvania, per pound	35	to	50
Hay, baled, first quality, for retail, per ton	20 00	to	— —	Michigan, per lb.	32	to	40
baled, second quality, for shipping, per ton	12 00	to	— —	other western, do	32	to	38
Beef, mess, per bbl.	8 00	to	10 00	pulled, do	20	to	40
extra mess, do	10 00	to	11 00	combing fleece, do	48	to	50
Pork, mess, do	16 70	to	— —	California, do	14	to	30
extra mess, do	— —	to	— —	**PHILADELPHIA.**			
prime mess, do	19 50	to	— —	Flour, superfine, per bbl.	3 50	to	3 75
Lard, per lb	9¾	to	10¼	Pennsylvania extra to choice, per bbl.	4 00	to	6 50
Butter, western, do	18	to	37	western extra to choice, per barrel	5 75	to	7 00
State dairy, do	29	to	38	Wheat, white, per bush.	1 25	to	1 35
Cheese, State factory, do	10	to	13½	amber, do	1 23	to	1 28
western factory, do	8	to	11½	red, do	1 05	to	1 23
Sugar, fair to prime refining, per pound	8¼	to	9½	Rye, do	70	to	78
Cotton, ordinary to good ordinary, per lb.	9 3-16	to	10 1-16	Corn, do	54	to	59
low middling to good middling, per lb.	10 9-16	to	11 7-16	Oats, do	30	to	42
Tobacco, lugs, per lb.	5¼	to	9	Hay, baled, prime, per ton	14 00	to	18 00
leaf, do	8	to	13½	baled, common to fair shipping, per ton	10 00	to	13 00
Wool, American XXX and picklock, per lb.	46	to	48	Beef, western mess, per bbl.	6 00	to	8 00
American X and XX, per pound	32	to	45	extra mess, do	10 00	to	11 00
American, combing, per lb.	44	to	50	Warthman's and Alburger's city family, per barrel	13 00	to	— —
California spring clip, per pound	16	to	28	Pork, mess, per bbl.	17 50	to	18 00
California fall clip, per lb.	11	to	21	prime mess, do	16 00	to	17 00
pulled, do	22	to	40	extra prime, do	— —	to	— —
BOSTON.				Lard, per lb.	10½	to	15
Flour, western superfine, spring, per barrel	4 25	to	4 50	Butter, choice Middle State, do	28	to	38
common spring extra, per barrel	4 75	to	5 50	choice western, do	—	to	—
good to fancy northwestern spring, per bbl.	5 75	to	9 25	Cheese, New York factory, per lb.	3½	to	11½
good to fancy western winter, per bbl.	6 00	to	8 50	Ohio factory, do	3	to	11½
southern family, per bbl.	6 50	to	8 50	Sugar, fair to good refining, per lb	8¼	to	9
Wheat, per bush	1 05	to	1 35	Cotton, ordinary to good ordinary, per lb.	8¼	to	9½
Corn, do	55	to	64	low middling to good middling, per lb.	10¼	to	11¾
Oats, do	35	to	50	Wool, Ohio and Pennsylvania X to XXX, per lb.	41	to	45
Rye, do	75	to	80	other western, do	36	to	38
Barley, do	95	to	1 20	pulled, do	22	to	36
Hay, eastern and northern, per ton	12 00	to	20 00	combing, washed and unwashed, per pound	37	to	50
western choice, per ton	17 00	to	19 00	tub-washed, do	30	to	45
				BALTIMORE.			
				Flour superfine, per bbl.	3 50	to	4 50
				extra, do	4 75	to	5 50
				family, do	5 75	to	8 25

Market-prices of farm-products—Continued.

Articles.	Prices.
BALTIMORE—Continued.	
Wheat, red ....per bush.	$1 15 to $1 30
amber ....do...	1 33 to 1 38
white ....do...	1 20 to 1 35
Rye.......................do...	60 to 65
Oats ....do...	34 to 45
Corn ....do...	53½ to 59
Hay, Maryland and Pennsylvania...........per ton.	19 00 to 20 00
western ....do...	— — to — —
Pork, mess ....per bbl.	18 25 to — —
prime ....do...	— — to — —
extra prime ....do...	17 00 to — —
Lard ....per lb.	10½ to 12
Butter, western ....do...	16 to 30
eastern ....do...	22 to 27
Cheese, western factory ....do...	10 to 12
eastern factory ....do...	12 to 13¾
Sugar, fair to good refining.do...	8¾ to 9
New Orleans, grocery grades...........per lb.	— to —
Tobacco, lugs...............do...	6½ to 9
leaf, common to medium, per pound	9 to 11
Cotton, ordinary to good ordinary ....per lb.	8½ to 9½
low middling to good middling .... per lb.	10½ to 11⅛
Wool, tub-washed ....do...	35 to 40
fleece-washed........do...	28 to 33
pulled ....do...	23 to 35
unwashed ....do...	24 to 28
CINCINNATI.	
Flour, superfine ....per bbl.	3 75 to 4 25
extra ....do...	4 75 to 5 25
family and fancy ....do...	5 40 to 7 00
Wheat, winter, red ....per bush.	1 05 to 1 18
hill, (amber) ....do...	1 17 to 1 25
white ....do...	1 17 to 1 25
Oats ....do...	28 to 43
Corn......................do...	47 to 48
Rye.......................do...	60 to 67
Barley ....do...	1 00 to 1 15
Hay, baled, No. 1........per ton.	11 00 to 12 00
lower grades...do...	9 00 to 10 00
Pork, mess ....per bbl.	17 00 to — —
Lard ....per lb.	10½ to 11½
Butter, choice..............do...	20 to 35
prime ....do...	20 to 23
Cheese, prime to choice factory, per pound	12½ to 13
Sugar, New Orleans, fair to good, per pound..............	— to —
prime ....per lb.	— to —
Tobacco, lugs...............do...	— to —
leaf ....do...	— to —
Cotton, ordinary to good ordinary ....per lb.	8⅝ to 9⅜
low middling to good middling.......per lb.	10⅓ to 10¾
Wool, fleece-washed........do...	30 to 32
tub-washed ....do...	28 to 36
unwashed, clothing .do...	22 to 23
unwashed, combing .do...	27 to 31
pulled ....do...	24 to 26
CHICAGO.	
Flour, choice winter extras, per barrel	6 50 to — —
common to good winter extras ... .per bbl.	5 50 to 6 00
spring extras, common to good............per bbl.	5 00 to 5 25
spring extras, choice.do...	5 25 to 5 75
patent spring ....do...	5 75 to 7 50
spring superfines....do..	3 00 to 3 50
CHICAGO—Continued.	
Wheat, No. 1 spring ...per bush.	$1 12 to — —
No. 2 spring........do...	1 10 to $1 10½
No. 3 spring........do...	92 to —
Rye, No. 2 ....do...	61 to — —
Barley, No. 2 ....do...	85 to 87
Corn, No. 2 ....do...	46¼ to 47¼
Oats, No. 2 ....do...	33½ to 34
Hay, timothy. ....per ton.	10 00 to 11 25
prairie ....do...	7 00 to 8 00
Beef, mess ....per bbl	10 75 to 11 00
extra mess...........do...	11 75 to 12 00
Pork, mess . ...do...	16 20 to 16 50
prime mess..........do...	— — to — —
extra prime..........do...	13 50 to — —
Lard ....per lb.	9⅓ to 10½
Butter, choice to fancy ....do...	27 to 32
medium to good .. .do...	20 to 24
Cheese, good to choice factory, per pound	11½ to 12⅓
Sugar, New Orleans.......per lb.	— to —
Wool, tub-washed...........do...	39 to 40
fleece-washed........do...	34 to 37
unwashed ....do...	23 to 24
pulled ....do...	— to —
SAINT LOUIS.	
Flour, winter, common to choice, per barrel.............	3 25 to 7 00
spring............per bbl.	— — to — —
Wheat, red winter..... per bush.	1 03 to 1 17
white winter ......do...	— — to — —
spring ....do...	1 03 to 1 17
Oats ....do...	30 to 36½
Corn.......................do...	39 to 45
Rye........................do...	42 to 52
Barley, fair to choice.......do...	— to 95
Hay, timothy............per ton.	11 00 to 13 00
prairie ....do...	7 00 to 11 00
Beef, mess ....per bbl.	13 50 to 14 00
Pork, mess.................do...	17 50 to 18 00
Lard ....per lb.	14 to 16
Butter, prime to choice dairy, per pound............	26 to 30
country packed.. per lb.	20 to 25
Cheese, Ohio factory ....do...	12½ to 13½
N. Y. factory.......do...	13 to 14
Cotton, ordinary to good ordinary ....per lb.	8⅝ to 9½
low middling to good middling ....per lb.	10 to 11
Wool, tub-washed ....do...	33 to 40
fleece-washed........do...	— to —
unwashed ....do...	24 to 31
Tobacco, lugs ....do...	3¾ to 4½
common to shipping, leaf............per lb.	5 to 12
NEW ORLEANS.	
Flour, superfine ....per bbl.	3 75 to 4 00
extra ....do...	4 25 to 5 50
choice to fancy ......do...	5 75 to 7 25
Corn, white and yellow.per bush.	50 to 65
Oats.......................do...	47 to 55
Hay, choice..............per ton.	21 00 to — —
prime ....do...	17 50 to 18 00
Beef, Texas..............per bbl.	10 00 to — —
western ....do...	13 00 to 14 00
Fulton market...per ½ bbl.	9 75 to 10 00
Pork, mess ....per bbl.	18 75 to 19 00
Lard ....per lb.	11¼ to 12
Butter, choice Goshen......do...	35 to —
choice western .....do...	25 to —
Cheese, choice western factory, per pound.............	13 to 14
N. Y. cream......per lb.	15 to 16
Sugar, fair to fully fair.....do...	— to —
prime to strictly prime, per pound..............	— to —

Market-prices of farm-products, &c.—Continued.

Articles.	Prices.	Articles.	Prices.
NEW ORLEANS—Continued.		SAN FRANCISCO—Continued.	
Sugar, clarified, white, and yellow.....per lb.	$0 11 to $0 11⅞	Barley.....per cental.	$0 90 to $1 10
Cotton, ordinary to good ordinary.....per lb.	8½ to 9⅜	Oats.....do...	1 40 to 1 75
low middling to good middling.....per lb.	9½ to 10⅞	Corn.....do...	1 15 to 1 25
Tobacco, lugs.....do...	5½ to 8	Hay, State.....per ton.	7 50 to 13 00
leaf, low to medium, per pound.....	8½ to 12	Pork, mess.....per bbl.	23 00 to 24 00
SAN FRANCISCO.		prime mess.....do...	17 50 to 18 50
Flour, superfine.....per bbl.	4 00 to 4 25	Beef, mess.....do...	9 00 to 10 00
extra.....do...	4 50 to 4 75	family mess.....per ½ bbl.	8 50 to 10 00
family and fancy....do...	5 00 to 5 25	Lard.....per lb.	13½ to 15
Wheat, California....per cental.	1 50 to 1 62½	Butter, overland.....do..	16 to 18
Oregon.....do...	1 50 to 1 60	California.....do..	25 to 45
		Oregon.....do..	20 to 25
		Cheese.....do..	12½ to 15
		Wool, native.....do..	10 to 12
		California.....do..	15 to 22
		Oregon.....do..	20 to 25

LIVE-STOCK MARKETS.

NEW YORK.		CHICAGO—Continued.	
Cattle, extra beeves..per cental.	$9 50 to $10 75	Sheep.....per cental	$2 75 to $4 50
good to prime.....do....	8 00 to 9 00	Swine.....do...	5 00 to 6 30
common to fair.....do....	6 00 to 7 50	SAINT LOUIS.	
Texans and Cherokees, per cental.....	6 00 to 7 50	Cattle, good to choice native steers, per cental.....	4 50 to 4 90
bulk of sales..per cental.	— — to — —	common to fair natives, per cental.....	3 25 to 4 25
average.....do...	— — to — —	inferior to common natives.....per cental.	2 00 to 3 25
milch-cows.....per head.	50 00 to 75 00	Texans, fair to choice, per cental.....	3 00 to 4 00
veal calves....per cental.	5 50 to 9 50	Sheep.....per cental.	2 50 to 4 50
Sheep.....do....	4 00 to 6 75	Swine.....do....	5 50 to 6 25
Swine.....do....	6 65 to 7 00	Horses, plugs.....per head.	30 00 to 65 00
PHILADELPHIA.		plain.....do....	50 00 to 90 00
Cattle, choice beeves..per cental.	5 75 to 6 25	street-car.....do....	75 00 to 125 00
fair to good.....do....	4 62½ to 5 50	good to extra draught, per head.....	100 00 to 130 00
common.....do....	3 00 to 4 50	good drivers...per head.	175 00 to 225 00
Sheep.....do....	1 50 to 5 75	extra.....do....	225 00 to 250 00
Swine, corn-fed.....do....	8 75 to 9 25	auction, and ponies, per head.....	25 00 to 45 00
BALTIMORE.		Mules, 14 to 15 hands high, per head.....	85 00 to 120 00
Cattle, best beeves....per cental.	4 87 to 5 25	15 to 16 hands high, per head.....	115 00 to 150 00
first quality.....do....	4 00 to 4 87	extra.....per head.	175 00 to 185 00
medium or good quality, per cental.....	3 25 to 4 00	NEW ORLEANS.	
ordinary.....per cental.	2 50 to 3 25	Cattle, Texas beeves, choice, per head.....	40 00 to — —
general average of the market.....per cental.	3 87 to — —	first quality....per head.	35 00 to — —
most of the sales...do....	3 25 to 4 25	second quality.....do....	30 00 to — —
Sheep.....per cental.	2 00 to 5 25	western beeves, per cental.	— — to — —
Swine.....do....	7 50 to 8 75	milch-cows.....per head.	40 00 to 90 00
CINCINNATI.		veal calves.....do...	7 00 to 9 00
Cattle, good to choice native steers.....per cental.	4 00 to 4 65	Sheep.....do...	2 00 to 6 00
fair to medium....do....	2 75 to 3 75	Swine.....do...	6 00 to 8 00
common.....do....	2 00 to 2 50	Horses, good combined.....do...	150 00 to 200 00
milch-cows....per head.	— — to — —	good plugs.....do...	100 00 to 150 00
veal calves....per cental.	— — to — —	common.....do...	40 00 to 80 00
Sheep.....do....	2 25 to 4 50	Mules, first-class, broken..do....	175 00 to 200 00
Swine.....do....	5 00 to 6 15	good, suitable for sugar-making, broken, per head.....	175 00 to 225 00
CHICAGO.		Small, suited to rice and cotton planters, broken, per head.....	100 00 to 150 00
Cattle, choice beeves, 1,300 to 1,500 pounds..per cental.	4 60 to 5 00	Green mules generally sell about $10 less per head than broken ones.	
good beeves, 1,200 to 1,350 pounds..per cental.	4 25 to 4 50		
medium grades, 1,050 to 1,200 pounds..per cental	3 25 to 4 00		
inferior natives.....do...	1 50 to 2 00		
Texans, through droves, per cental.....	2 10 to 3 00		

FOREIGN MARKETS.

WHEAT.—Autumnal weather in the British Islands has hitherto been, on the whole, unfavorable to agricultural operations, the rain-fall being excessive, and the temperature, except in a few brief intervals of sunshine, being low for the season. North British farmers in most cases succeeded in getting their grain secured in good order, but others were disappointed, being compelled to clear their fields for fall plowing, and, consequently, to house their crops in unfavorable weather. In Ireland farmers enjoyed better opportunities for securing their crops. The same causes have hindered the thrashing of the grain, and consequently the amount of the new crop marketed is small, and that of poor quality, from damp and inferior condition. This kind of wheat can be disposed of only at a decline of 1*s.* per quarter from the previous rates, and even at these depressed prices the trade is by no means brisk. The average imports into the United Kingdom since harvest were but little more than half the amounts of the corresponding period of 1875, when the stocks of old British wheat left over were increasing; they are now gradually declining. The shipments from the Atlantic ports of the United States and Canada for the four weeks ending September 25 were 228,000 quarters less than during the same period of 1875. British dealers and consumers are beginning to feel some anxiety at the slowness with which supplies are arriving from the United States and Russia, a fact which indicates a speedy rise in prices. The possibilities growing out of a war in Southeastern Europe have had an unsettling effect upon the market. As Russia is the main source of supply of red wheat, a rupture between her and the British government would cut off one of their leading sources of supply, and would gravely affect the prices of subsistence in the British Islands.

The imports of wheat into the United Kingdom during the last week of September amounted to 537,622 cwt. The sales of English wheat during that week amounted to 65,758 quarters, at 47*s.* per quarter, against 51,830 quarters, at 47*s.* 1*d.* per quarter, during the corresponding week of 1875; the London averages were 49*s.* 7*d.* on 4,057 quarters. During the first week of September the sales of English wheat were 67,158 quarters, at 47*s.* 1*d.*, against 59,122 quarters, at 45*s.* 11*d.*, the previous year; London averages, 3,961 quarters, at 47*s.* 1*d.*

The first week in September opened in London with very little animation; native wheat received, 7,754 quarters; foreign, 23,015, mostly from Russia; no supplies from American Atlantic ports. Essex and Kent white brought, in Mark Lane, from 45*s.* to 50*s.* per quarter; ditto, red, 43*s.* to 47*s.*; Dantzic mixed, 50*s.* to 54*s.*; Königsberg, 49*s.* to 53*s.*; Rostock, new, 50*s.* to 52*s.*; Pomeranian, Mecklenburg, and Uchermark, red, 48*s.* to 50*s.*; Ghirka, 42*s.* to 44*s.*; Russian, hard, 42*s.* to 43*s.*; Saxonska, 43*s.* to 47*s.*; Danish and Holstein, red, 46*s.* to 49*s.*; American, red, 50*s.* to 51*s.*; Chilian, white, 46*s.*; Californian, 50*s.*; Australian, 50*s.* to 51*s.*

In Liverpool, British white was quoted at 9*s.* 6*d.* to 10*s.* 2*d.* per cental; ditto red, 9*s.* 2*d.* to 9*s.* 10*d.*; Canadian white, 9*s.* 10*d.* to 10*s.* 3*d.*; Red Club and Golden Drop, 9*s.* 8*d.* to 10*s* 2*d.*; American red winter, 9*s.* 3*d.* to 10*s.* 3*d.*; No. 1 spring, 9*s.* 7*d.* to 9*s.* 9*d.*; No. 2 spring, 9*s.* 1*d.* to 9*s.* 6*d.*; No. 3 spring, 8*s.* 2*d.* to 8*s.* 9*d.*; Bombay, 9*s.* to 9*s.* 6*d.*; Calcutta, 8*s.* 2*d.* to 9*s.*; Saidi, 7*s.* 2*d.* to 7*s.* 4*d.*; Buhi, 7*s.* 9*d.* to 8*s.* 9*d.*; California, 10*s.* 2*d.* to 10*s.* 4*d.*; Club, 10*s.* 6*d.* to 10*s.* 8*d.*; Oregon, 10*s.* 5*d.* to 10 7*d.*; Chilian, 9*s.* 5*d.* to 9*s.* 9*d.*; Australian, 10*s.* 6*d.* to 10*s.* 8*d.*

In France October opened with spring-like temperature, and the dis-

tricts north of the Loire were enabled to resume their labors in the field that had been interrupted by bad weather. Wheat-sowing was in rapid progress. The country markets were dealing mostly in seed-wheats, and very few lots for grinding had found sale. An advance in prices was noticed in 16 provincial markets, against 21 at the close of the previous week; 78 remained calm to firm, against 58 the previous week; 11 showed decline, against 16 the previous week. At Paris the demand for wheat on the spot was slow; the transactions were few and at low prices; ordinary qualities ranged from 49*s.* 2*d.* to 51*s.* 5*d.* per quarter; the best white sorts reached 52*s.* 9*d.*

At Marseilles 50,000 quarters arrived during the last week in September, and the stock on hand was estimated at 150,000 quarters. The Belgian, Dutch, and German markets exhibited but little animation. The weather was generally unfavorable for sowing, and in some parts of Germany crops not housed were injured by excessive rains.

FLOUR.—The imports of flour into the United Kingdom during the first week in October amounted to 140,362 cwt. against 110,636 cwt. the previous week. Supplies of English flour were good in London, and previous prices were with difficulty maintained. In Mark Lane the best town households was quoted at 36*s.* to 43*s.* per 280 pounds; best country households, 34*s.* to 36*s.*; Norfolk and Suffolk, old, 31*s.* to 32*s.*; French, 30*s.* to 35*s.*; American, 22*s.* to 23*s.* per barrel of 190 pounds; ditto extra and double extra, 23*s.* to 24*s.* At Liverpool, English and Irish superfines brought 37*s.* to 39*s.* per 280 pounds; ditto extra, 40*s.* to 46*s.*; French, 38*s.* 6*d.* to 46*s.* 6*d.*; Trieste, 47*s.* 6*d.* to 55*s.*; Californian, 37*s.* to 40*s.*; American, western, and extra State, 22*s.* 6*d.* to 25*s.* per barrel; Baltimore and Philadelphia, 22*s.* 6*d.* to 26*s.*; Ohio and extra, 23*s.* 6*d.* to 26*s.* 6*d.*; extra Canadian, 25*s.* to 27*s.*; Canadian patent barrel, 29*s.* to 33*s.* At Paris, superior flour, to be delivered in October, was quoted at 36*s.* 8*d.* to 36*s.* 10*d.*, the longer futures being increased.

MAIZE.—The imports of maize into the United Kingdom during the first week of October amounted to only 17,780 quarters against 42,278 quarters the week immediately previous. The trade ruled quiet and prices easier. In Mark Lane white maize was quoted at 26*s.* to 27*s.* per quarter; yellow, 25*s.* to 26*s.* per quarter. In Liverpool, American white brought 30*s.* per 480 pounds; ditto, mixed, 26*s.* to 26*s.* 3*d.*; Galatz, 27*s.* to 27*s.* 6*d.*; Danubian, 25*s.* 6*d.* to 25*s.* 9*d.*; Dari, 27*s.* to 27*s.* 6*d.*